

EUROPEAN FIELD SERVICES PROGRAM

1983 ANNUAL REPORT

INPUT

About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, the recommendations and innovative ideas.

needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading services firm. Clients include the world's largest and most technologically advanced companies.

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Planning Services for Management

EUROPEAN FIELD SERVICES PROGRAM 1983 ANNUAL REPORT

ABSTRACT

The annual report is divided into four main sections:

- A comparison of user and vendor perceptions regarding common service issues.
- A vendor analysis of service quality, pricing, contracts, and management information.
- A user analysis of service quality, issues, pricing, availability, performance criteria, and attitudes for all systems in Europe.
- A database of country-specific information for the U.K., France, West Germany, Scandinavia, Benelux, and Italy. The database includes three years of research.

This year the report focuses on product differentiation as well as on market (country) segmentation.

User views are emphasised as they are important to signal new needs or changes in services business.

This report contains 314 pages, including 160 exhibits.



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EUROPEAN FIELD SERVICES PROGRAM
1983 ANNUAL REPORT

DECEMBER 1983

EUROPEAN FIELD SERVICES PROGRAM

1983 ANNUAL REPORT

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I INTRODUCTION

I INTRODUCTION

A. SCOPE

- The 1983 Field Service Annual Report is the fourth published since INPUT established the European Field Service Program in 1979. With the previous years' data included in the database as well as new trends and issues highlighted, it is a comprehensive planning reference for European field service managers.
- The report has a significantly larger sample size than previous years had. Exhibit I-1 indicates the size of the user respondent base by product. Over 2,000 individual units are represented in the research.
- Over 700 users responded to the 1983 survey, an increase of five times the 1982 sample. Exhibit I-2 shows the distribution of respondents by country; user respondents by type of business and by size of company are shown in Exhibits I-3 and I-4 respectively.
- The vendor sample for 1983 was double that of 1982. Exhibit I-5 shows the distribution of vendor respondents by country.

EXHIBIT I-1

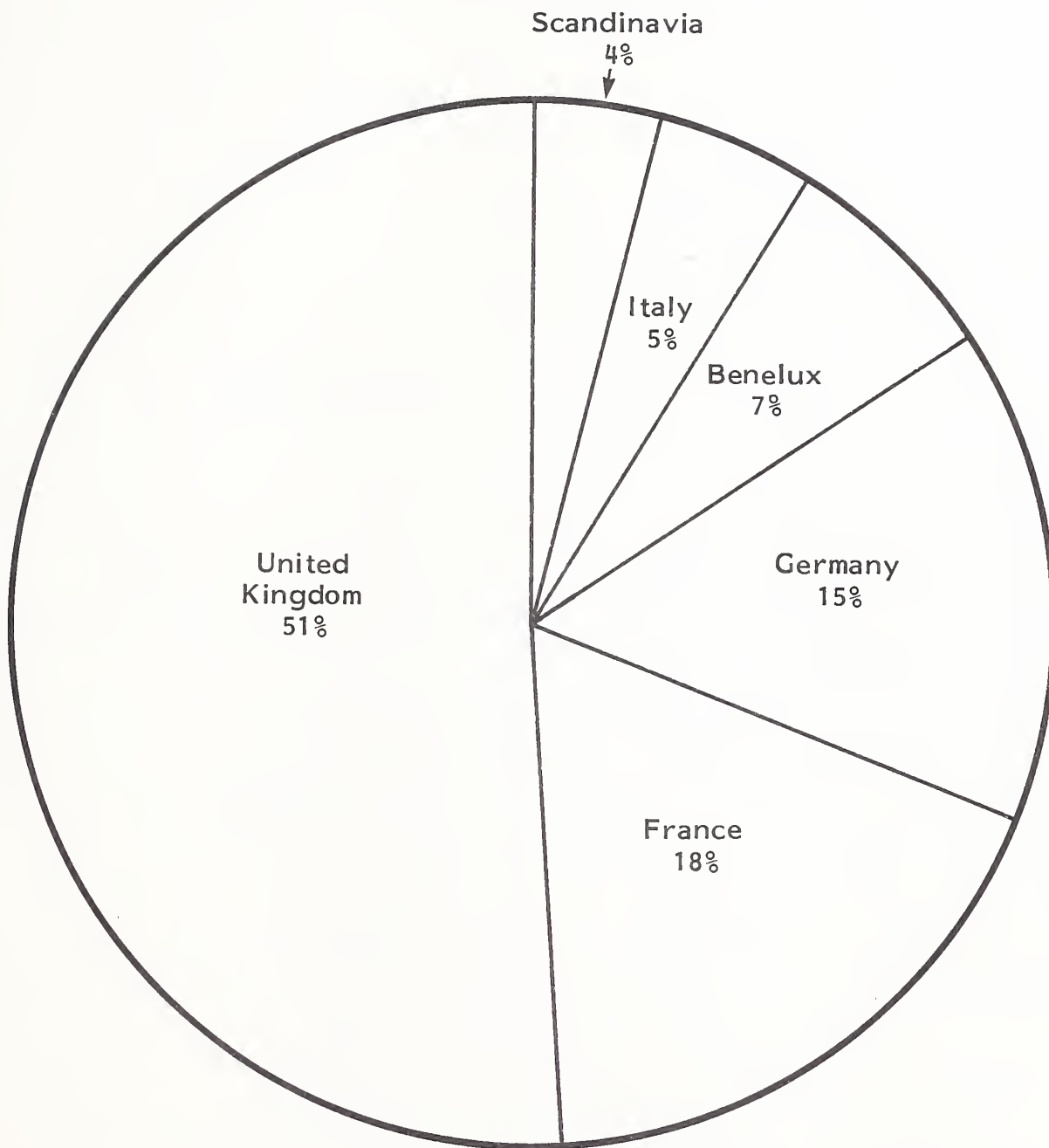
USER RESPONDENT BASE BY PRODUCT

PRODUCT CLASSIFICATION	NUMBER OF UNITS IN SAMPLES	PERCENT TOTAL SAMPLE
Large Systems	323	14.3%
Small Systems	453	20.0
Peripherals and Terminals	551	24.4
Datacommunications	281	12.5
Microcomputers	94	4.2
Word Processors	138	6.1
Copiers	28	1.2
PBXs	54	2.4
Systems Software	334	14.9
Total	2,256	100.0%

SOURCE: INPUT Survey

EXHIBIT I-2

USER RESPONDENTS BY COUNTRY
(Percent Mentions)

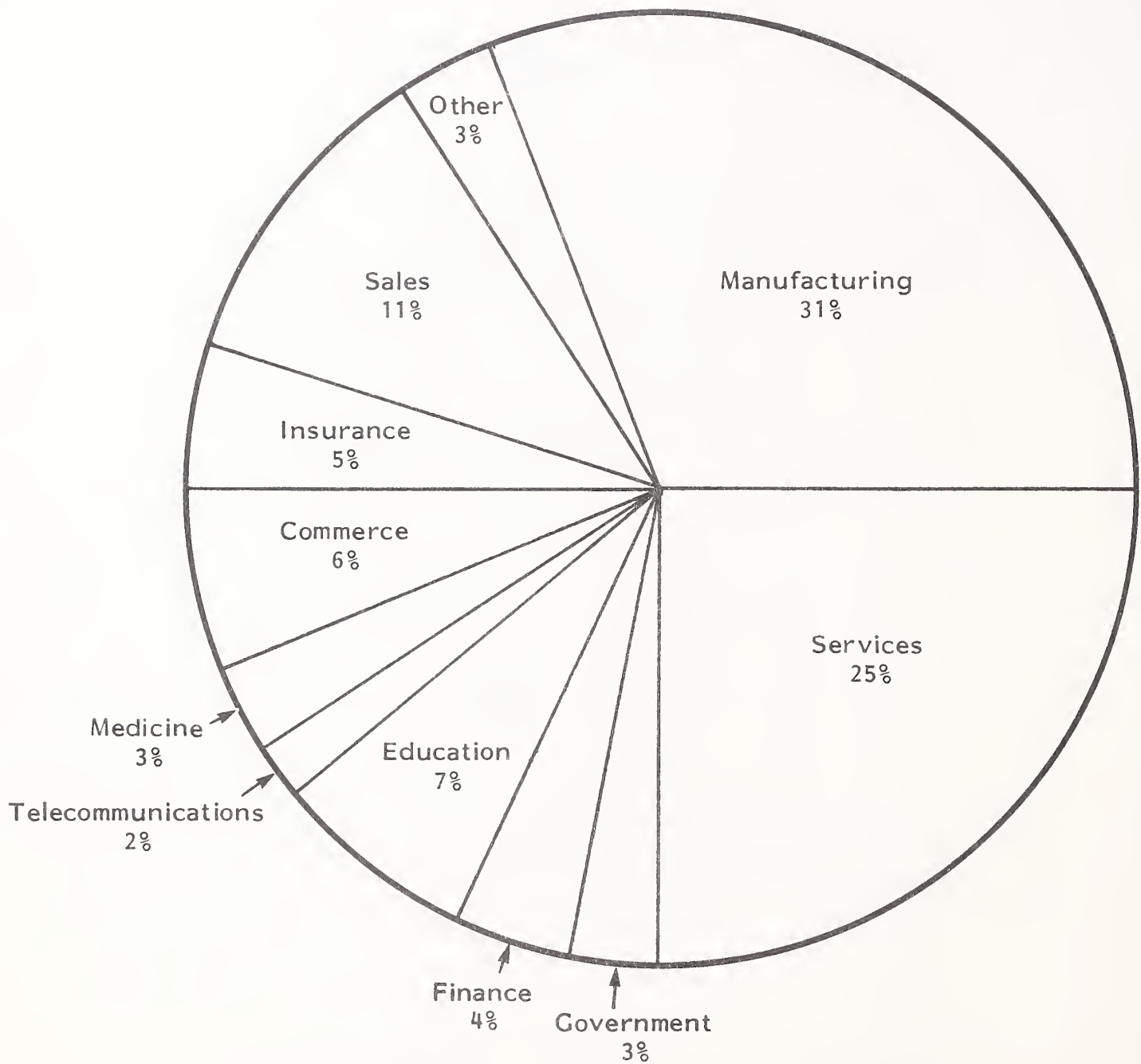


Total: 701 Respondents

SOURCE: INPUT Survey

EXHIBIT I-3

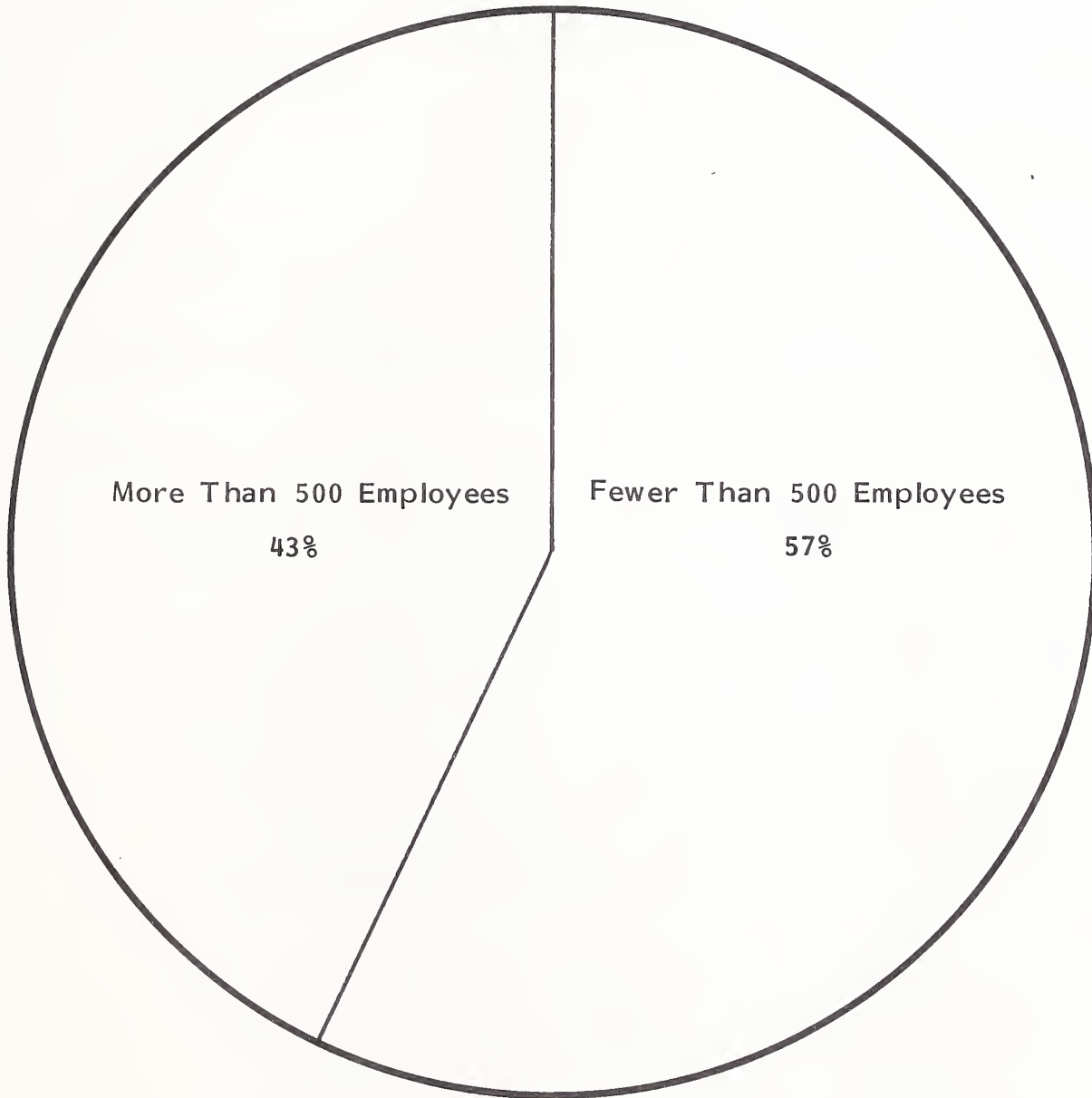
EUROPEAN USER RESPONDENTS BY BUSINESS TYPE
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT I-4

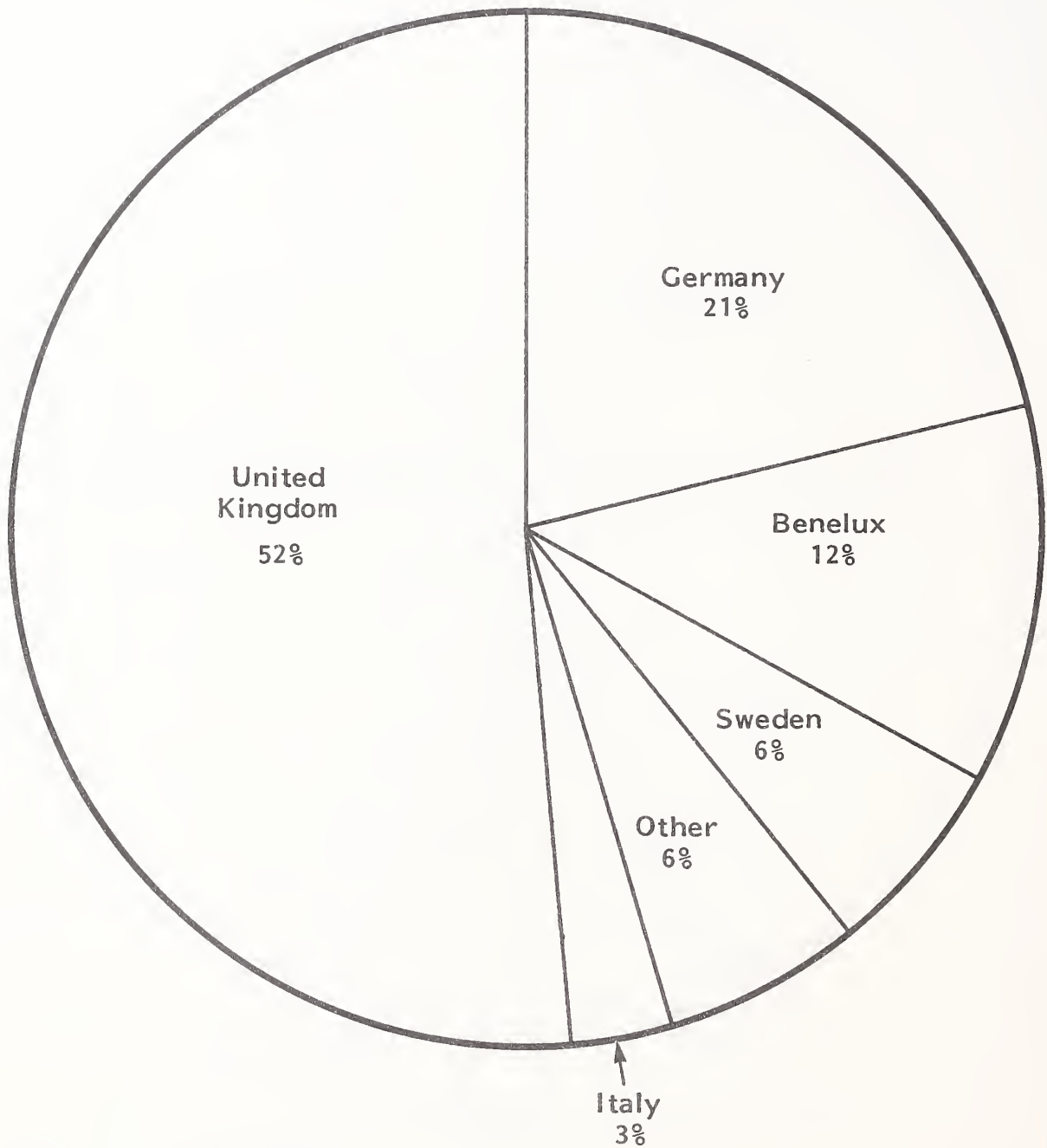
EUROPEAN USER RESPONDENTS BY SIZE OF COMPANY
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT I-5

VENDOR RESPONDENTS BY COUNTRY
(Percent Mentions)



Total: 33 Respondents

SOURCE: INPUT Survey

- Report data is divided into:
 - Europe (total).
 - Country (individual).
 - Product segment.
 - All products.
 - Vendor (by country).

- The 1983 European Field Service Annual Report is divided into six chapters:
 - Chapter I is an introduction.
 - Chapter II is an executive summary that provides an overview of important industry parameters regarding trends in revenues, costs, technological developments, attitudes, and issues. It also gives specific recommendations based on researched conclusions.
 - User/Vendor Comparative Analysis, Chapter III, is an analysis of users' and vendors' perceptions of common issues and shows some interesting discrepancies between actual and expected users' views.
 - Chapter IV analyses vendors' opinions of themselves in regard to:
 - Quality of service.
 - Service issues.
 - Availability, response time, and repair time.

- . No-faults-found and repeat-call experience.
 - . Different contracts.
 - . Pricing.
 - . Management and operations.
 - . Maintenance revenues.
- Chapter V is a summary of all systems and users in Europe. Data for this chapter is a composite of the individual databases in the appendices.
- Databases for each country - the United Kingdom, France, West Germany, Benelux, Scandinavia, and Italy are included in appendices A to F, where the research is organised and analysed according to the following categories:
 - . Commentary.
 - . Quality of service.
 - . Service issues, availability, response time, and repair time.
 - . Desire for different contracts, willingness to aid servicer, and willingness to pay for extra/improved service.
 - . Pricing.
 - . Attitudes and demographics.

- Exhibit I-6 is a table of exchange rates used in this report. All monetary figures given in the report, unless otherwise noted, are in U.S. dollars.

B. METHODOLOGY

- INPUT, Ltd., purchased names and addresses of information processing managers responsible for managing, obtaining, and maintaining information equipment. The list was a random sample and included 12,000 individual user contacts divided by country as follows.
 - 4,500 - U.K.
 - 3,000 - France.
 - 3,000 - West Germany.
 - 500 - Scandinavia.
 - 500 - Benelux.
 - 500 - Italy.
- The user questionnaire, Appendix H, was posted to each of the above with a gift promised in return for an acceptable reply. Approximately 6% returned a questionnaire.
- Similarly, vendor questionnaires were sent to approximately 500 service vendors in Europe resulting in a 6.6% return.

EXHIBIT I-6

EXCHANGE RATES USED IN
1983 FIELD SERVICE ANNUAL REPORT
(At 30 June 1983)

COUNTRY	1 POUND STERLING EQUALS
Belgium	77.95 Francs
France	11.70 Francs
Germany	3.90 Marks
Holland	4.37 Guilder
Italy	2,309.50 Lire
Norway	11.18 Krone
Sweden	11.68 Krone
USA	1.53 Dollars

- All user and vendor returns were entered into a computerised database, analysed, and filed by product and country on 5.25 inch floppy disks.
- Enquiries and comments are invited regarding this report and related topics of interest.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

A. CONCLUSIONS

I. THE INFORMATION TECHNOLOGY MARKETPLACE, 1983

- 1983 was a dynamic year for the information processing industry as economic conditions began showing more positive signs and double-digit inflation was, for the most part, anesthetised.
- Large-systems sales were reduced mainly due to the growth of distributed minicomputers, but the previous months' poor economy was also an important cause.
- 1983 was also a year of micromania as supply-and-demand factors for personal computers stimulated a buying surge.
 - In the U.K. an estimated 500,000 personal computers were sold, bringing the total personal-computer-per-capita ratio to twice that of the U.S. and one and a half times that of Japan.
 - Despite the micro boom, the myriad of dealers and distributors are having their problems. "Micro dealers have come and gone ever since people realised that profits could be made out of shipping boxes to eager customers and then fading away before after-sales service and

maintenance of the installed micros was needed," according to a third-quarter appraisal by a computer weekly.

- Concurrent with an upswing of electronic office systems, there were signs that the number of word processor installations was declining.
- Competitive struggles accelerated in a year of conservative demand, but there were few major new-product announcements. Contenders for market share in the world of information processing became more aggressive and anxiously initiated tactical and strategic changes to protect and enhance their respective businesses.
- Several get-togethers, whether joint ventures, mergers, or cooperative efforts, ensued - including, for example:
 - Siemens, Bull, and ICC, who joined forces to pursue common research goals.
 - Continuing emphasis on the EEC Esprit project.
 - IBM-Intel.
 - Honeywell-Ericsson.
- Reorganisations and restructuring of major companies such as Hewlett-Packard, which streamlined by eliminating:
 - Overlapping products.
 - Lagging development in new technology.
 - A piecemeal approach to key markets.

- Nowhere else has the high cost of participating in the information processing industry been more emphasised than in France, where state-owned CII-HB needed a cash transfusion of one billion francs (85 million pounds sterling) to exist through year's end.
- With the increasing demand for information and its products, survival for companies in the industry will largely depend on marketing skills.

2. FIELD SERVICE REVENUE, 1983-1988

- For the first time since estimates have been made by INPUT for the European maintenance business, a revenue decrease is forecast for 1985. This pessimistic conclusion is reached as a result of:
 - Vendors' own projections for maintenance revenue.
 - Users' own predictions of what they plan to spend on service.
 - A general belief that the previously monopolistic maintenance market has to undergo a "correction" owing to price, technological factors, and economic factors.
 - Revenue decline will be manifested by users taking less service coverage and/or relying on alternative sources for post-sales support, such as independent companies or self service.
 - More reliable and maintenance free or "fault tolerant" equipment.
- Exhibit II-I shows the impact of this decline on the five-year average annual growth rate.
 - Despite the maintenance revenue correction, engineers will be added at an average annual rate of about 4% to cover newer territories, products, and services.

EXHIBIT II-1

EUROPEAN FIELD SERVICE MAINTENANCE REVENUE AND EMPLOYMENT FORECAST, 1983-1988

YEAR	FIELD SERVICE REVENUES (\$ millions)	NUMBER OF FIELD ENGINEERS (thousands)	MAINTENANCE REVENUE PER FIELD ENGINEER (\$ thousands)
1983	\$6,174	50	\$123
1984	6,730	53	127
1985	6,124	53	116
1986	6,491	55	118
1987	7,076	58	122
1988	7,783	61	128
AAGR	5.0%	4.2%	0.8%

AAGR = Average Annual Growth Rate

SOURCE: INPUT Estimate

- Per capita revenue for engineers, presently at \$123,000, will also suffer from the 1985 correction.
- The majority of vendors believe that the best way to address the revenue crisis is to develop and implement:
 - Marketing plans.
 - Improved service quality.
 - Flexible contracts.
- These and other approaches are identified in Exhibit II-2. In the next year, as in the last one, INPUT will be addressing service revenues (e.g., Alternative Revenue Opportunities for Field Service, 1982).

3. FIELD SERVICE EXPENSES

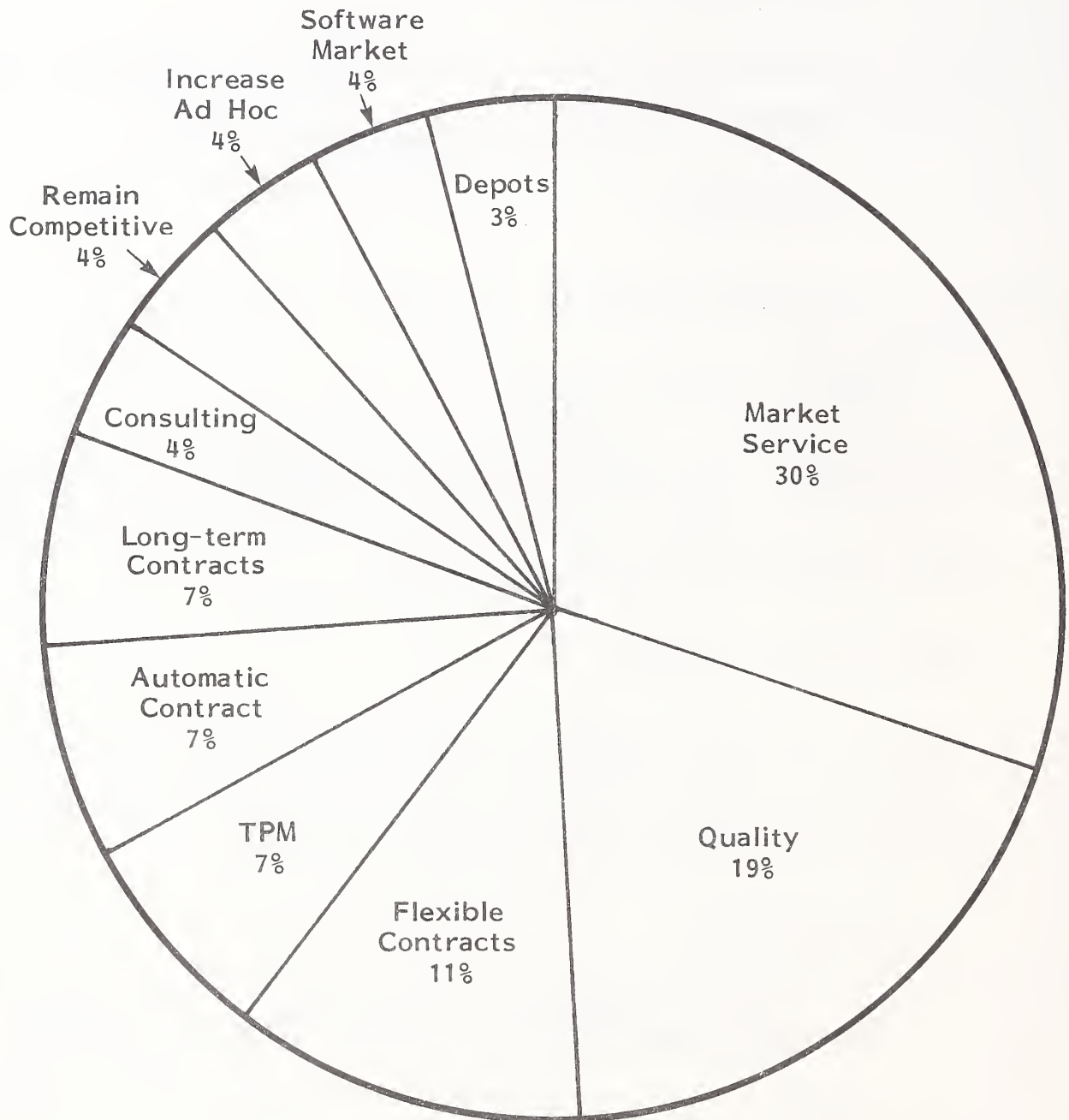
- Exhibit II-3 provides a snapshot of field service expenses by examining the average cost breakdown of a typical fault call. The total cost of \$252 as an average is less (by \$10) than that of 1982 for two reasons:
 - Belt tightening.
 - Fewer calls as the result of remote diagnostics and repair centres.

4. AVAILABILITY

- The discrepancies between user and vendor, shown in Exhibit II-4, for system availability show that vendors think they provide a higher degree of availability to users than users think they do. Also, there is a significant difference between what users say is their minimum acceptable limit and what

EXHIBIT II-2

VENDOR REVENUE ENHANCEMENT PLANS
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT II-3

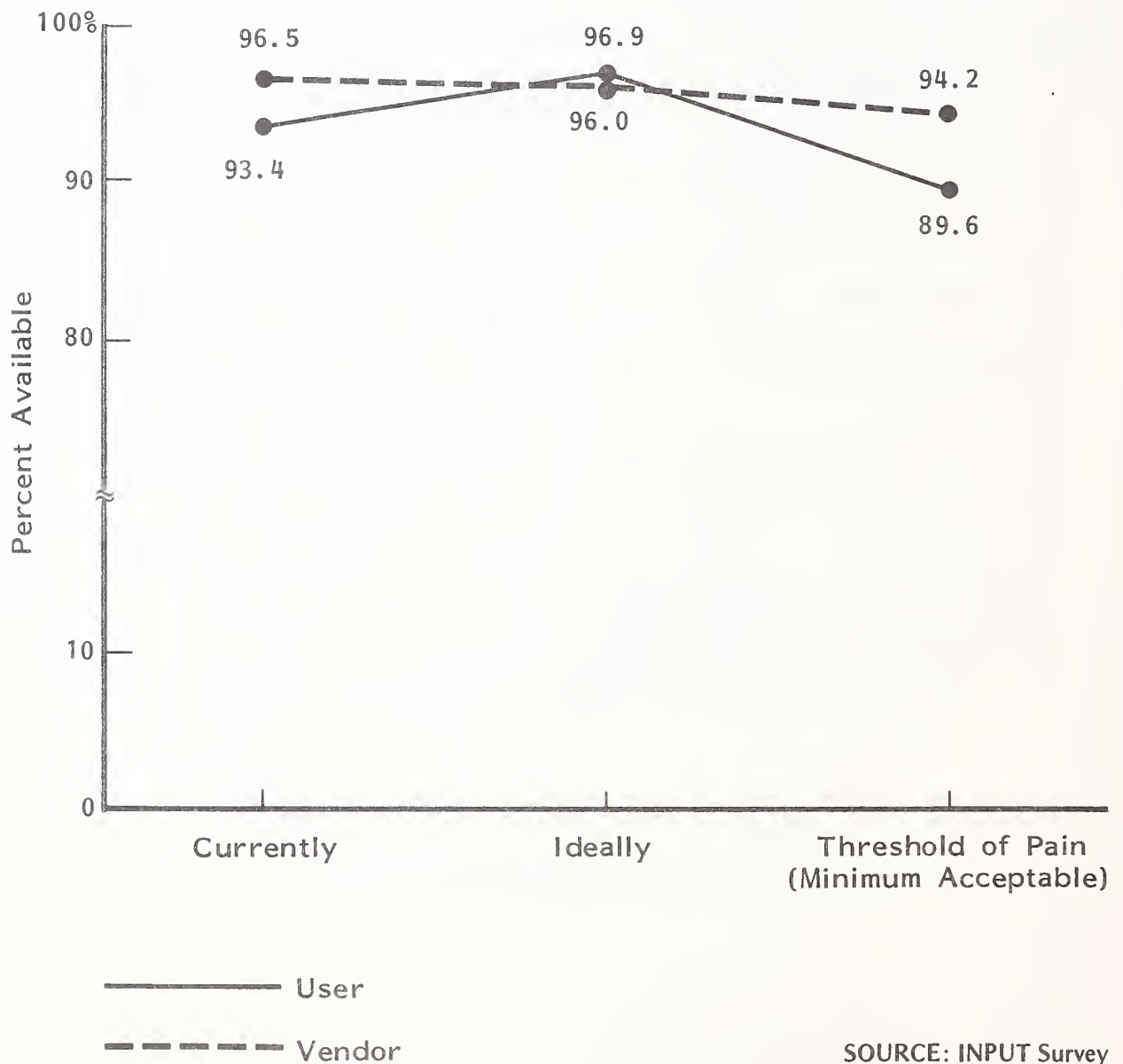
COST BREAKDOWN OF A TYPICAL FAULT CALL

COMPONENT	AVERAGE	MINIMUM	MAXIMUM
Average Cost (dollars)	\$252	\$75	\$800
Direct Labor (percent)	30%	10%	50%
Travel Labor (percent)	19%	7%	47%
Parts and Materials (percent)	20%	10%	35%
Travel Expense (percent)	10%	2%	20%
Burden and Overhead (percent)	21%	3%	44%
Average Number of Calls Per Week Per Engineer	8	3	15

SOURCE: INPUT Survey

EXHIBIT II-4

USERS' AND VENDORS' PERCEPTIONS OF
SYSTEM AVAILABILITY (Percent) IN EUROPE
FOR ALL SYSTEMS



vendors think it is. The difference between the sides with respect to ideal systems availability is interesting but hardly significant.

- The comparison is important in that users can tolerate considerably less systems availability than vendors believe they can. The challenge is in finding how to relax availability, which would reduce costs without jeopardising customer satisfaction. To meet the challenge, vendors must examine availability customer by customer.

5. ANNOYANCES, WORST FEATURES, AND SUGGESTIONS FOR IMPROVEMENT OF MAINTENANCE - USER VIEWS

- What bothers users about service and the areas of improvement are summarised in Exhibits II-5 to II-7. It is clear that users feel the need for improvements in responsiveness, capabilities, and the price of service. Users believe that more spare parts, better training, and more personalised service would improve maintenance.
- The essence of this feedback is that customers are increasingly aware of and displeased with high service costs and diminished personal contact with engineers and service organisations in general.

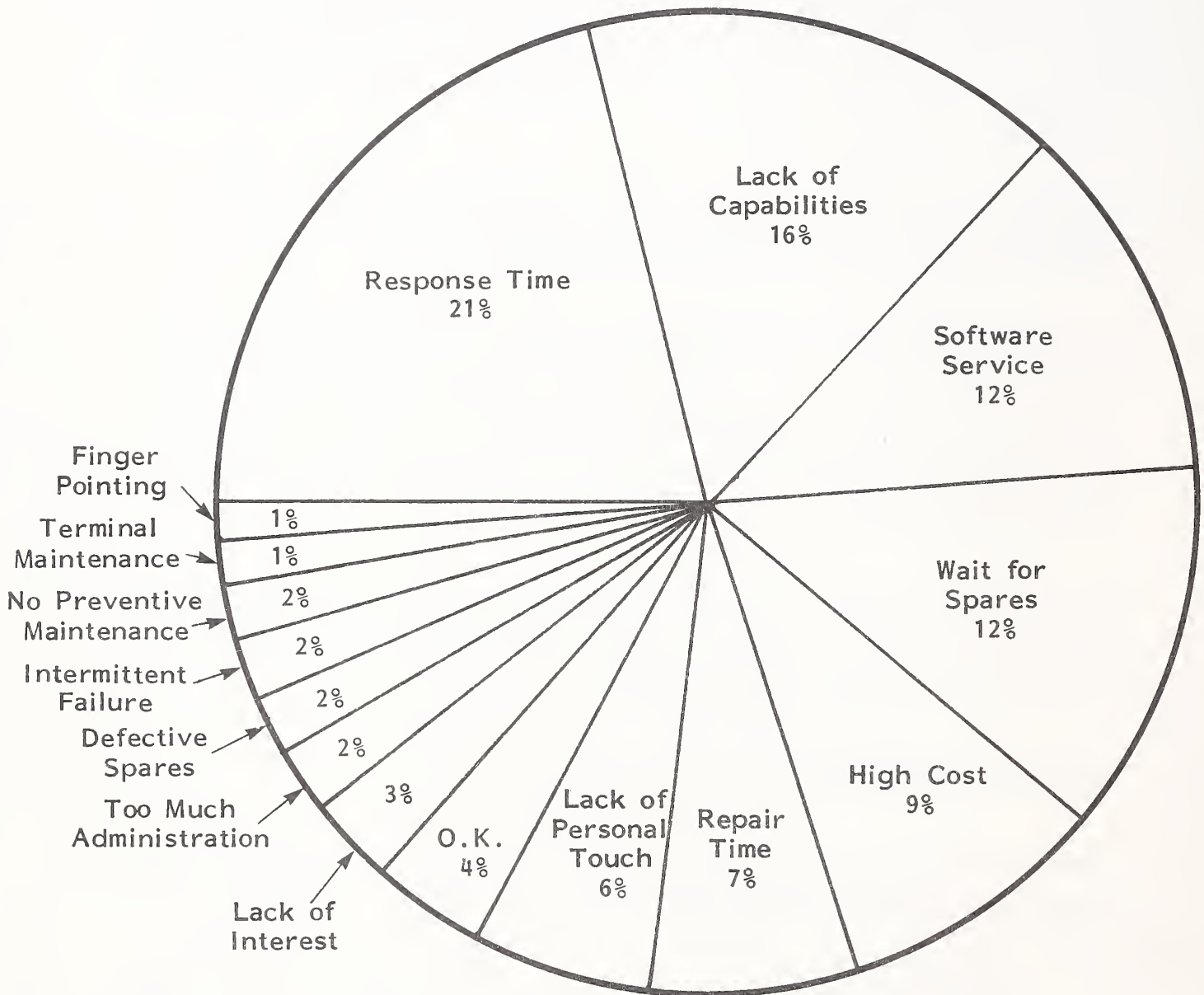
6. PRESENT AND FUTURE ISSUES IN SERVICE

- Vendors' views of the most important service issues are kaleidoscopic in their differences, as shown in Exhibit II-8.
 - Depot repair and microcomputers, very much related to each other generically, account for nearly one-third of important service issues.
 - The various impacts of microcomputers on field service firms are shown in Exhibit II-9. Two responses warrant comment:

EXHIBIT II-5

USER PERCEPTIONS OF WORST FEATURES OF
MAINTENANCE IN EUROPE

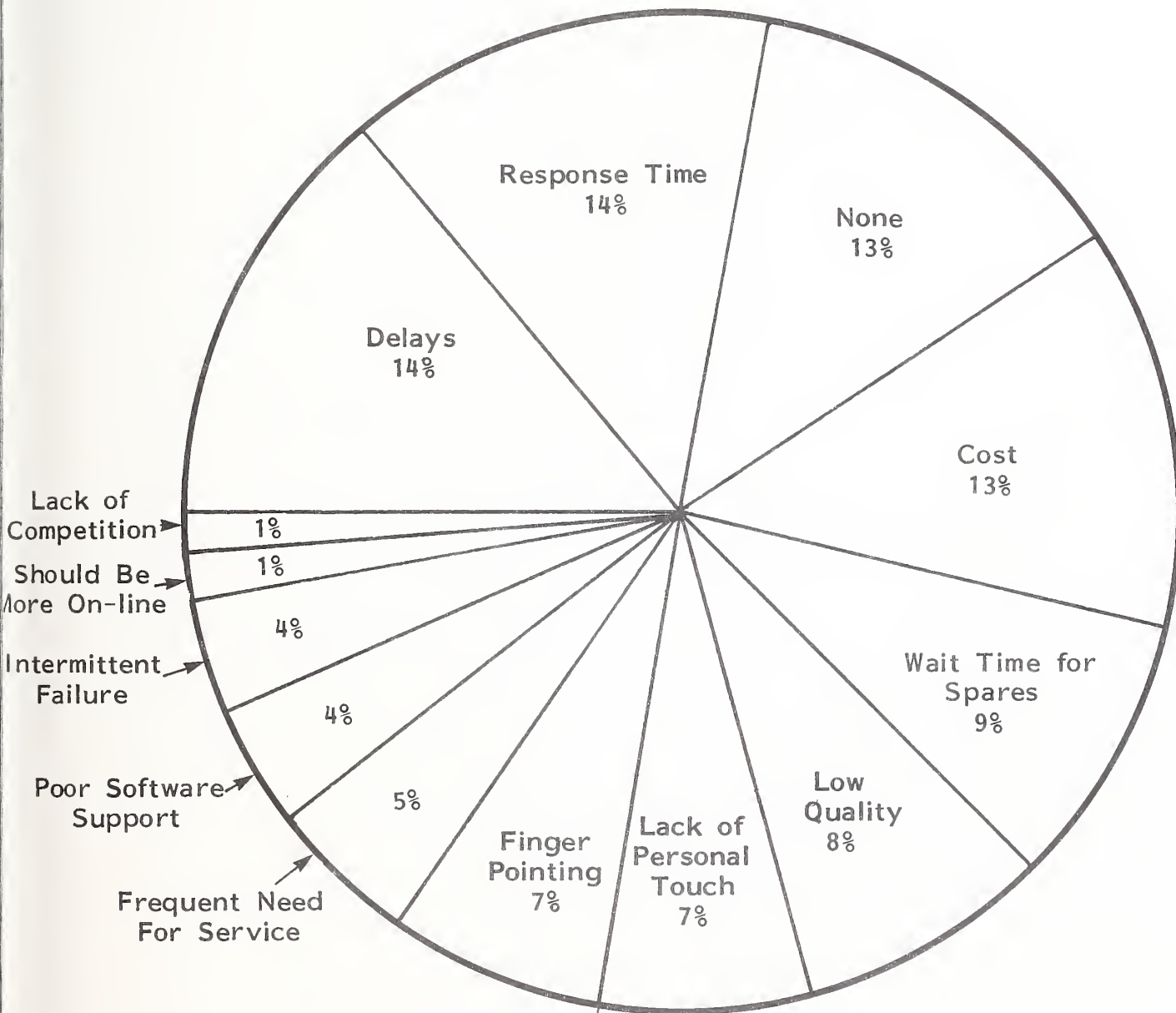
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT II-6

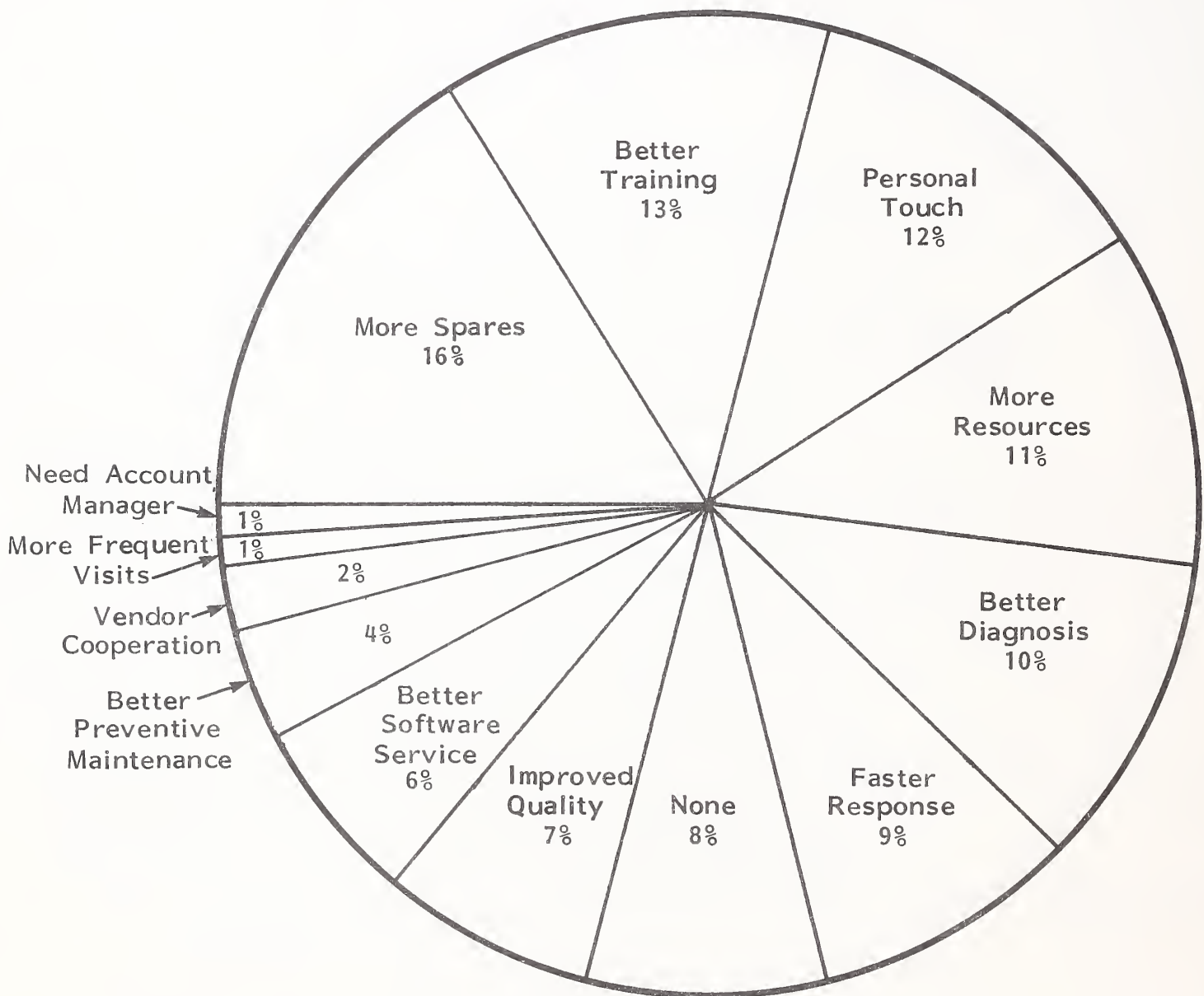
USER COMPLAINTS ABOUT SERVICE IN EUROPE (Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT II-7

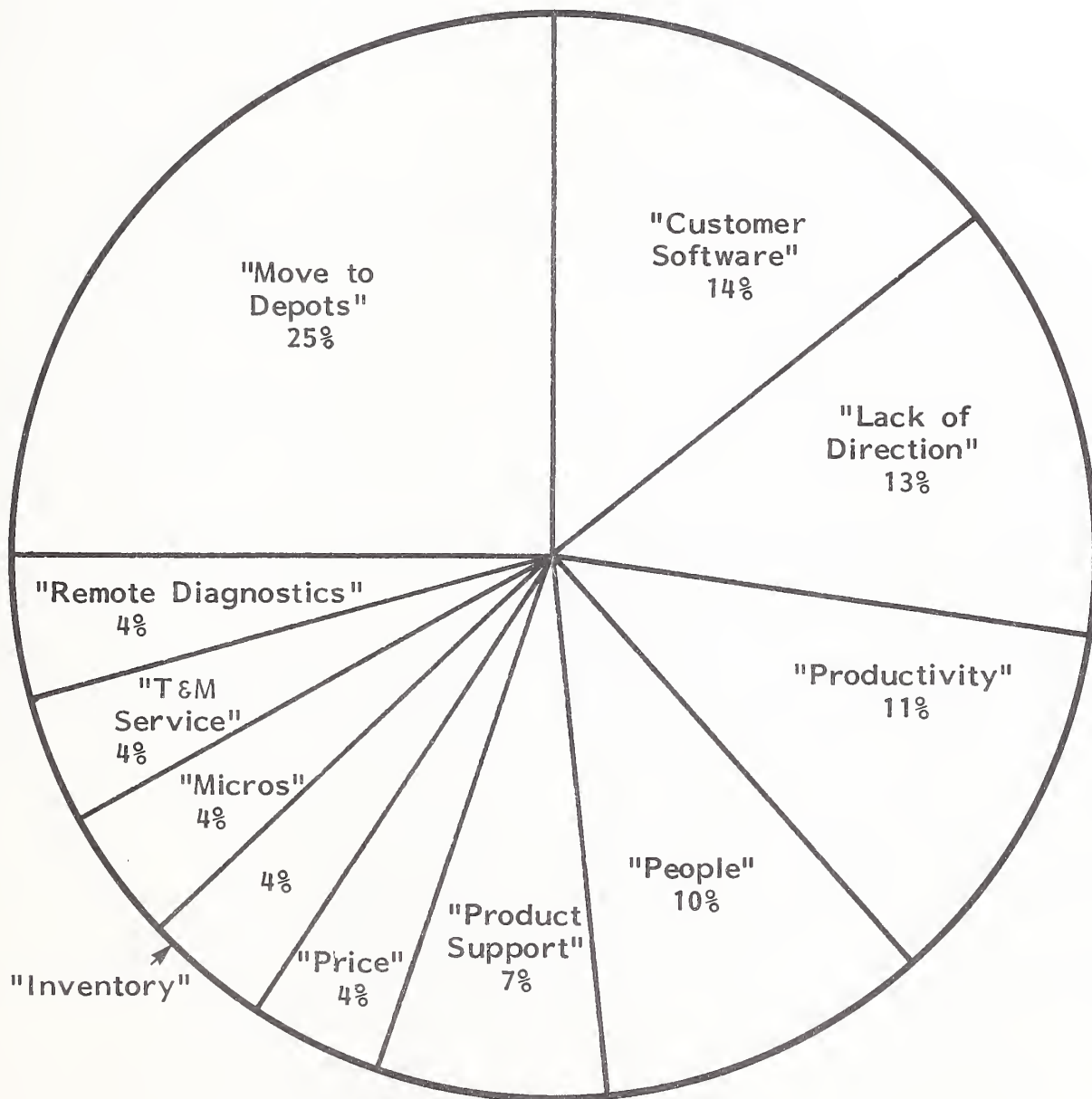
USER SUGGESTIONS FOR SERVICE IMPROVEMENT IN EUROPE
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT II-8

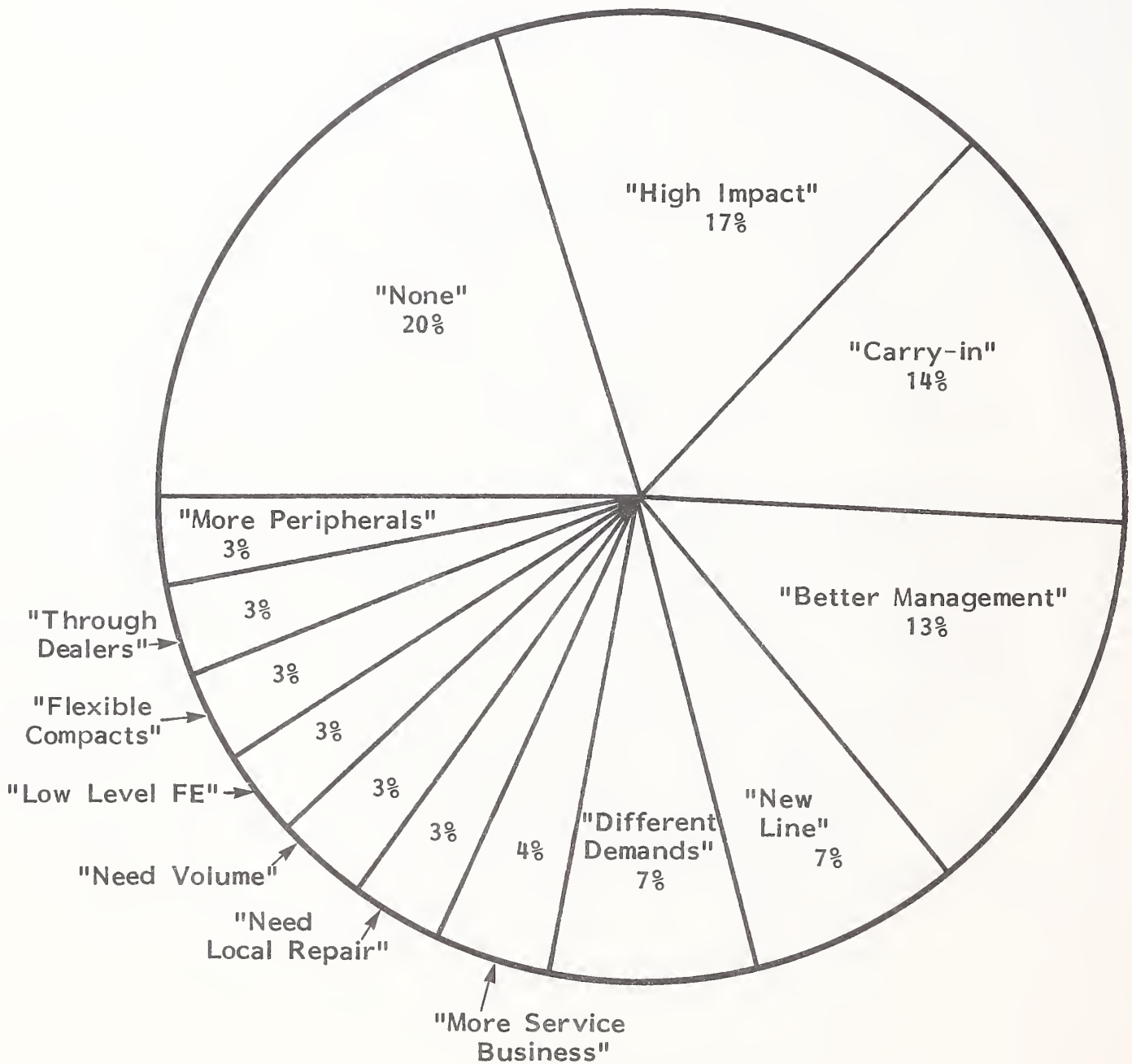
VENDORS' PERCEPTIONS OF MOST IMPORTANT SERVICE ISSUE
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT II-9

IMPACT OF MICROCOMPUTERS - VENDORS
(Percent Mentions)



SOURCE: INPUT Survey

- Respondents indicating "none" either suffer from limited vision or are truly insulated from microcomputers.
 - "Better management" means that service organisations are actually using microcomputers themselves to improve their field service operations.
- Service groups who are worried about the "lack of direction" in maintenance within their firms urgently need to communicate with their management to define problems and solutions. Because of increasing competition, a failure to resolve these issues will be fatal.
- The changing role of the field engineer, (see "people" in Exhibit II-8) is addressed by vendors and summarised in Exhibit II-10. These candid one-line replies say a lot about what has happened and will happen in the future to engineers in the changing service environment.
 - A small but wise group of respondents has identified one important role change as that of increasing the service engineer's sales orientation.
 - The need for marketing and sales of service will be covered later.
- Future concerns by service managers cover a broad range, as shown in Exhibit II-11, but productivity continues to be one of the most stressed.

7. MARKETING AND SALES

- A most significant requirement identified for European field service managers in 1983 is that of developing and implementing meaningful and comprehensive marketing and sales programs to stay alive in the service business. Exhibit II-12 shows where these marketing and sales efforts can be most effective.

EXHIBIT II-10

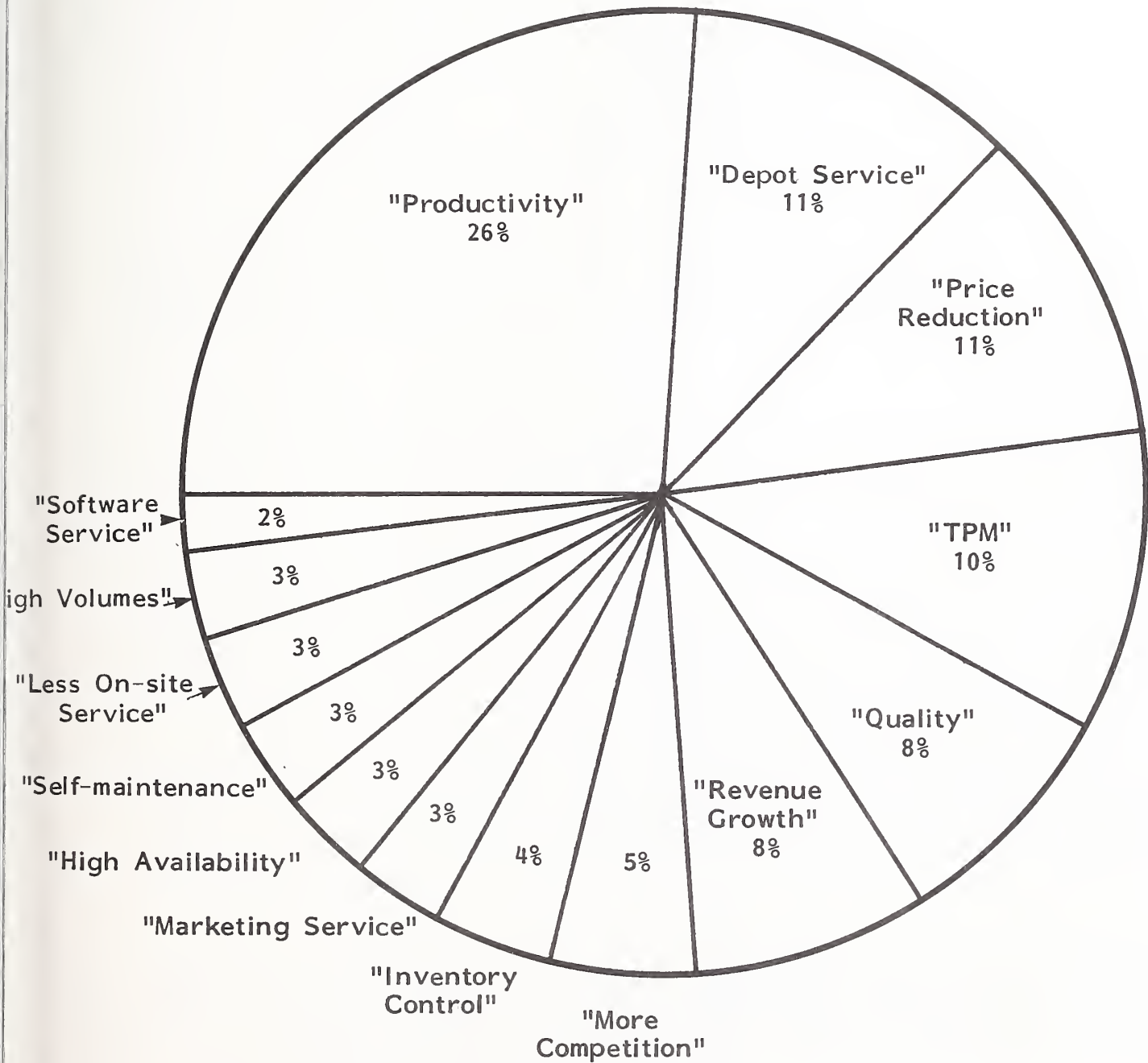
VENDORS' PERCEPTIONS OF CHANGING ROLE OF ENGINEER
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT II-11

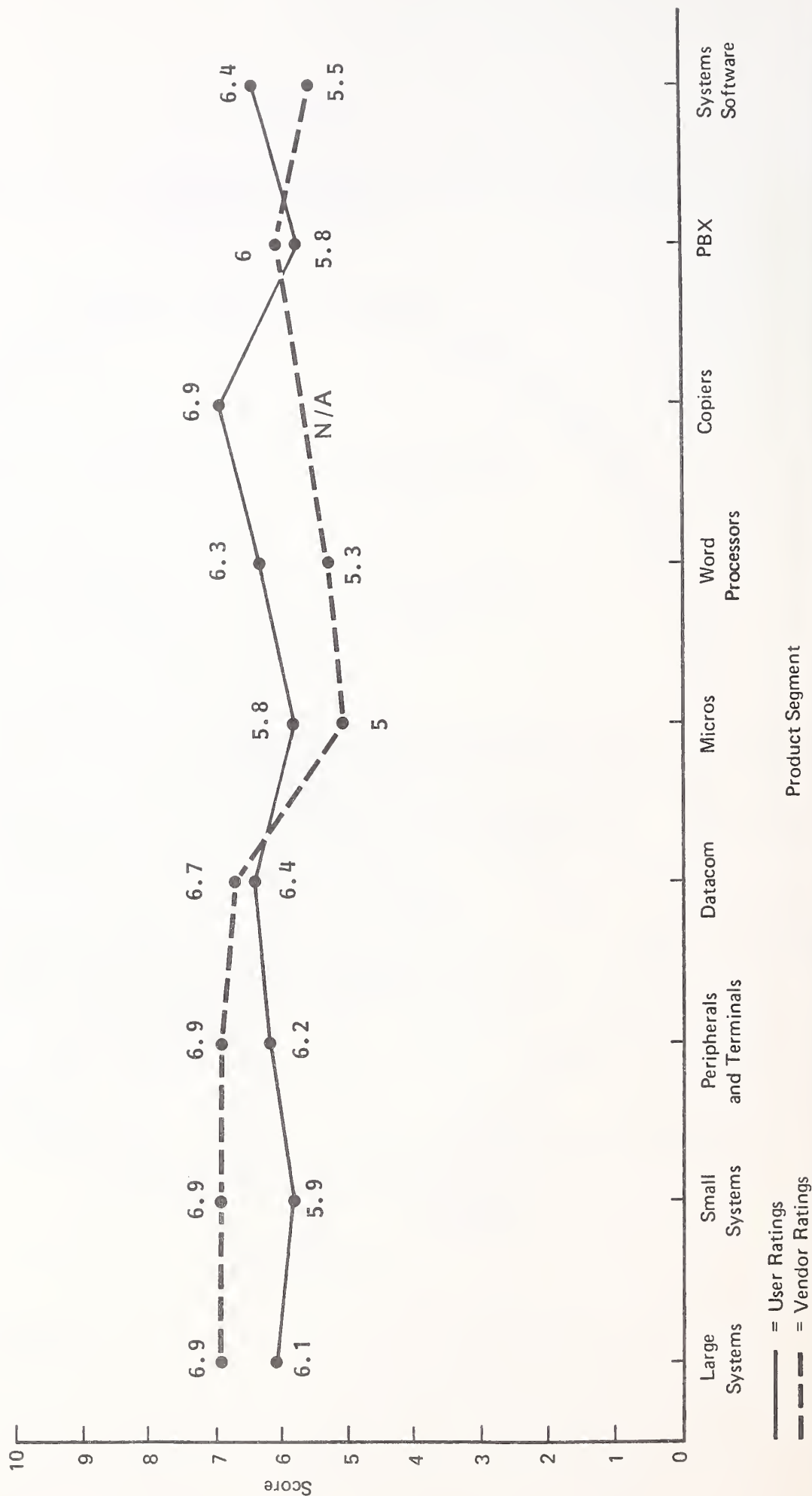
FUTURE ISSUES
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT II-12

USER AND VENDOR RATINGS OF MARKETING AND SALES



1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

- While service vendors do not agree, users perceive service marketing to be sufficient in microcomputers.
- The important fact here is that respondents are business users of microcomputers, not average consumers. This means that consumer marketing and sales of personal computers are much needed. The great volumes of this equipment that could be sold in the private sector would help lagging revenues.
- Otherwise vendors see a need for more service marketing in the large/small-systems and peripherals areas. These are important market targets because their service rates are higher than the rates for office products.
- The opportunity to increase marketing and sales efforts for software and PBX should be observed and assessed by more service groups.

B. RECOMMENDATIONS

- "Market or die" was a byword in a 1983 article addressed to minicomputer distributors. The phrase is also significant for service organisations. Opening up a separate competitive market for service from a previously monopolistic sleeping giant is a manifestation of the constantly and dramatically changing service business.
- Because marketing, sales, and promotional attention have not been well developed, however, customers and the public do not understand or even recognise all that field service is.
 - After reviewing 1983 European service, the most important recommendation INPUT can make is to develop marketing goals and strategies - soon.

- The first issue report from INPUT's 1984 Field Service Program, to be published in the first quarter, will address comprehensively the subject of marketing service in today's environment.
- Maintenance vendors should plan to resist and even to depress maintenance prices. In the past, service management has too often convinced itself that there are no other alternatives to increasing revenue.
 - The ultimate alternative is for customers to buy their equipment from another vendor who has lower maintenance prices.
 - As noted earlier in the 1983 INPUT report The Third-Party Maintenance Market in Europe, TPM is becoming more available to and accepted by European users.
 - The specific response to pricing pressures in the marketplace will be a function of the service organisation's goals and objectives.
- Finally, INPUT strongly recommends that client service vendors closely examine current methods of delivering service and all the possible alternatives in a changing service world. Creativity with emphasis on more flexibility, closer personal touch with customers, and utilising newer service tools and techniques should produce better maintenance options for a user base that needs them badly.
 - These creative options should blend with the marketing and pricing recommendations previously mentioned.
 - The details, data, and analysis contained in the following chapter are intended to stimulate creativity in service for 1984 and beyond.

III USER/VENDOR COMPARATIVE ANALYSIS

III USER/VENDOR COMPARATIVE ANALYSIS

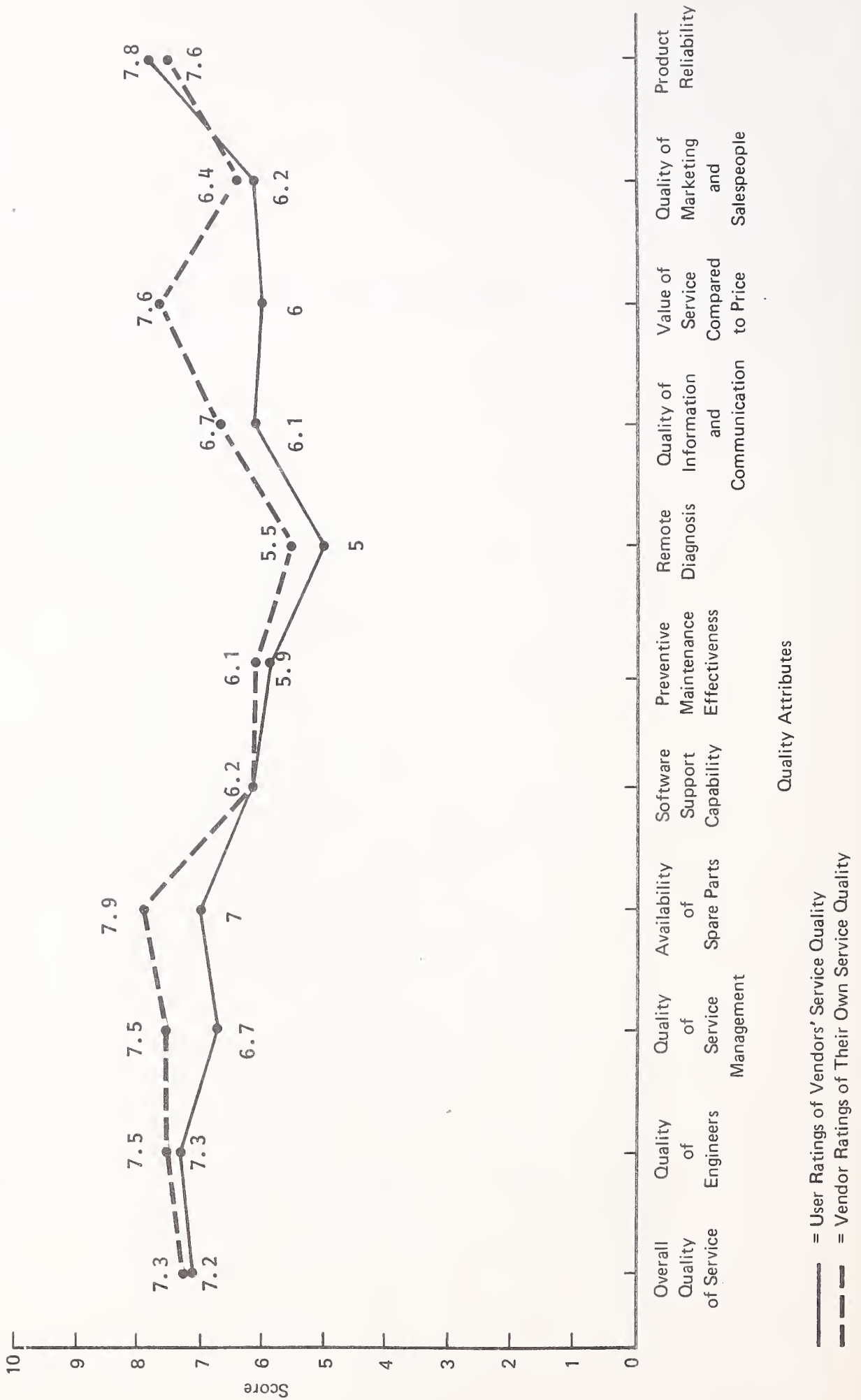
- Over half of this year's field service research for the annual report addresses common issues perceived by both vendors and users. The contrast of vendor and user answers to the same questions offers insight into differences and similarities that can be beneficial to service vendors' future strategies.

A. QUALITY OF SERVICE

- Exhibit III-1 compares users' and vendors' perceptions of service quality for all systems sampled in Europe. The values are remarkably close. Largest differences occur in:
 - The perceived value of service as compared to price.
 - Quality of service management.
 - In both cases, vendors give a higher rating to themselves than do users.
- Exhibits III-2 through III-10 summarise, by product segment, European user and vendor ratings for service quality. There are, in the following areas, noteworthy differences between vendor and user ratings:

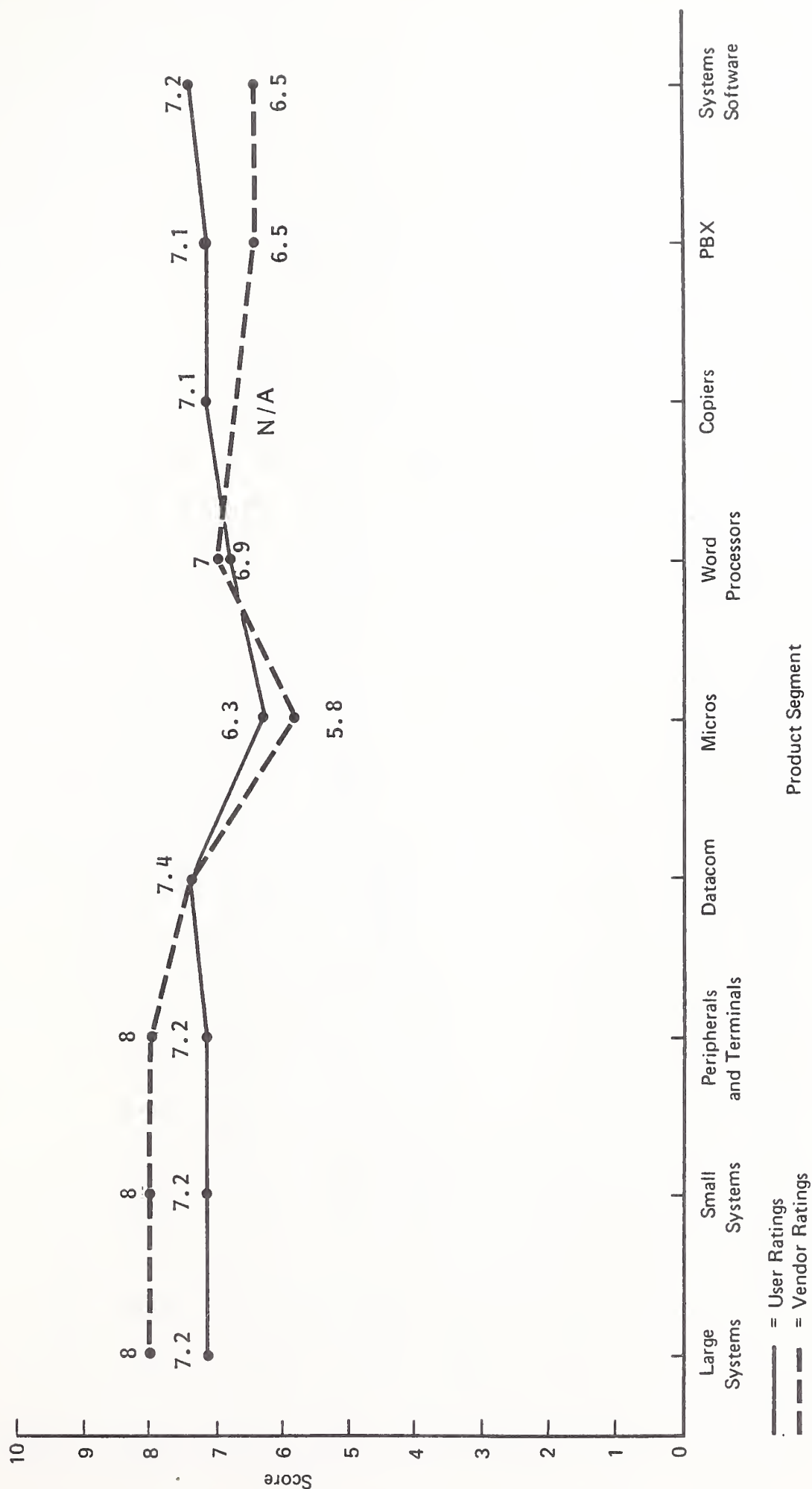
EXHIBIT III-1

EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY - ALL SYSTEMS



SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY - OVERALL

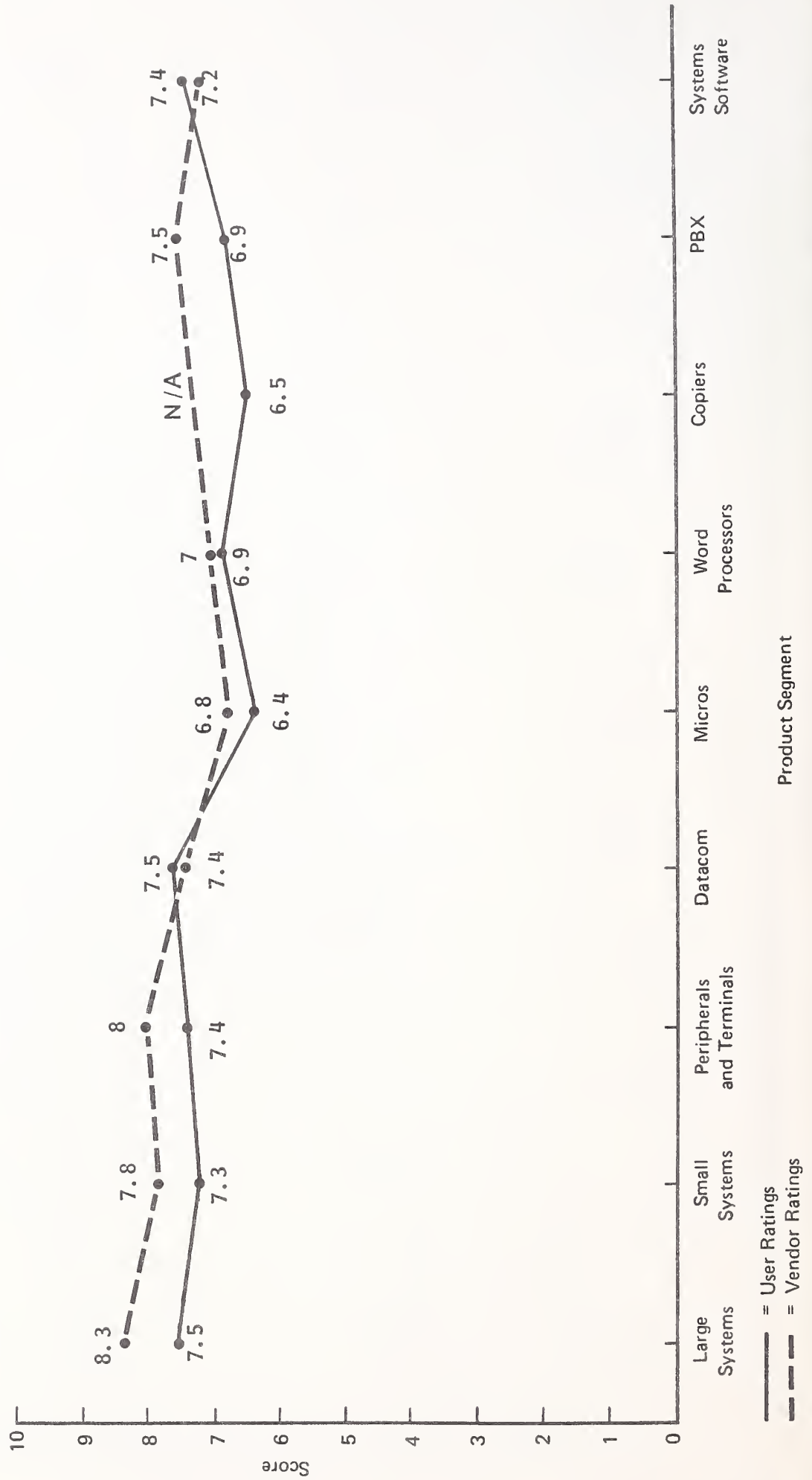


1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

EXHIBIT III-3

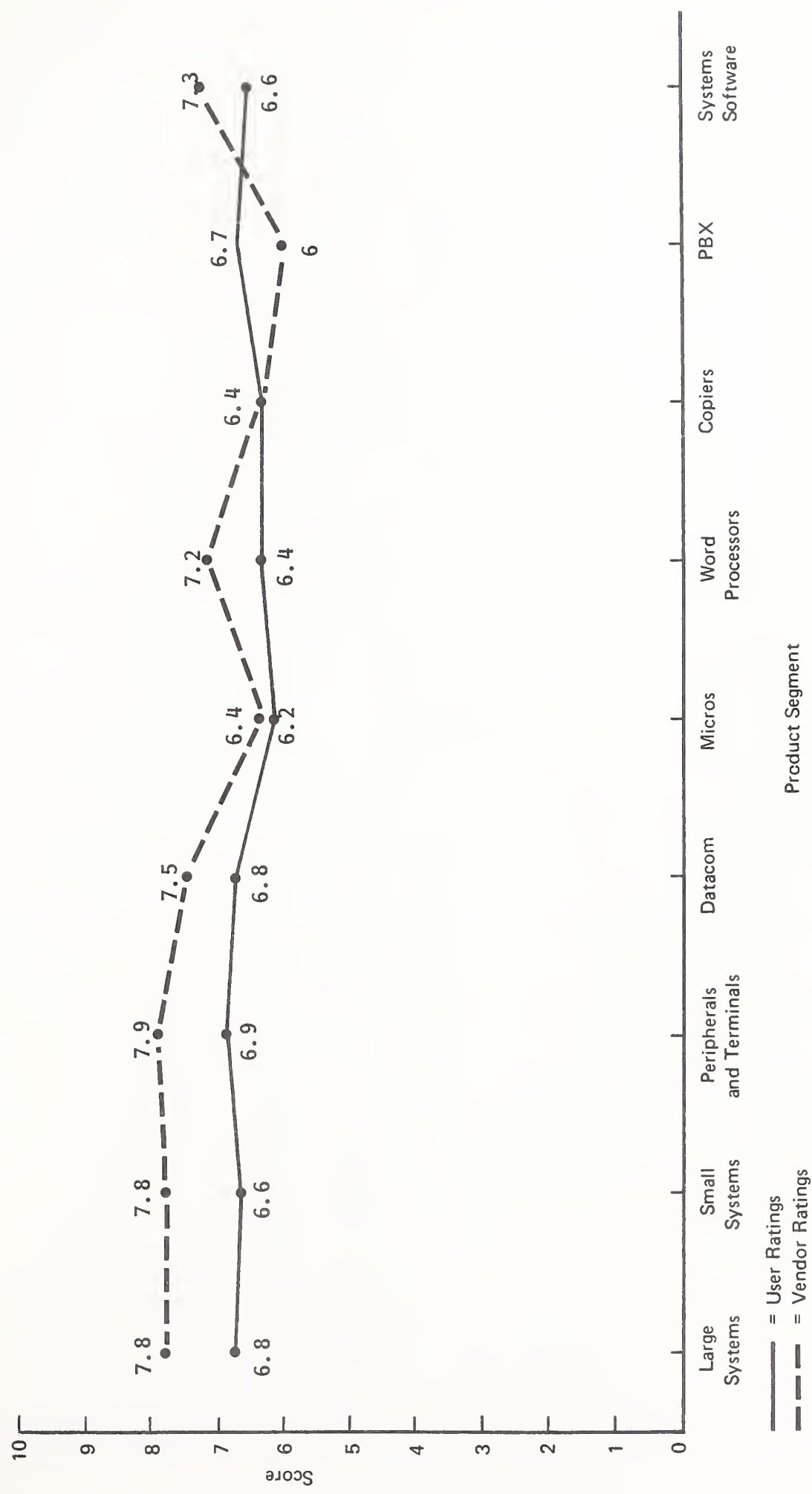
EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY - ENGINEERS



1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY -
MANAGEMENT

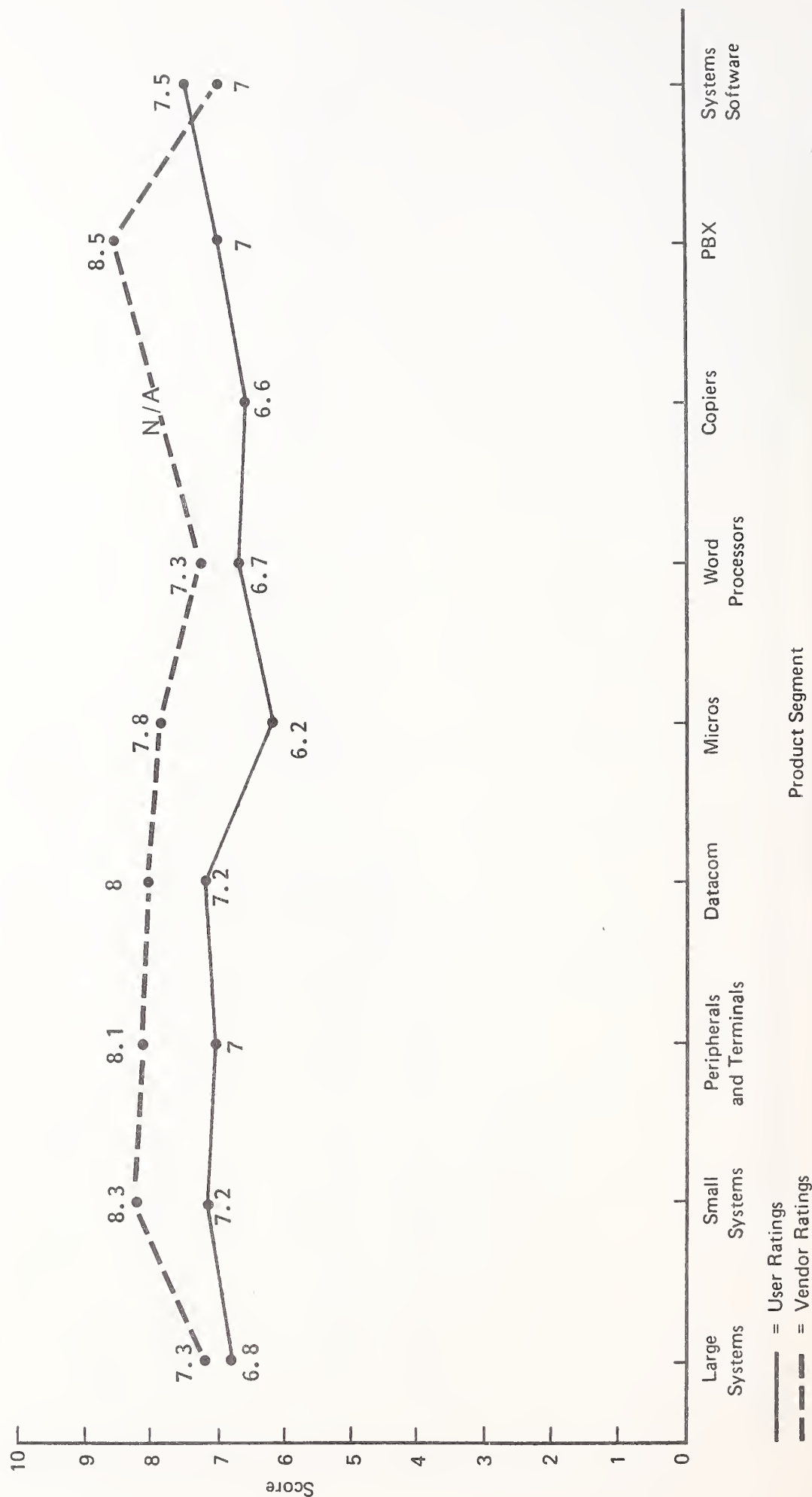


1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

EXHIBIT III-5

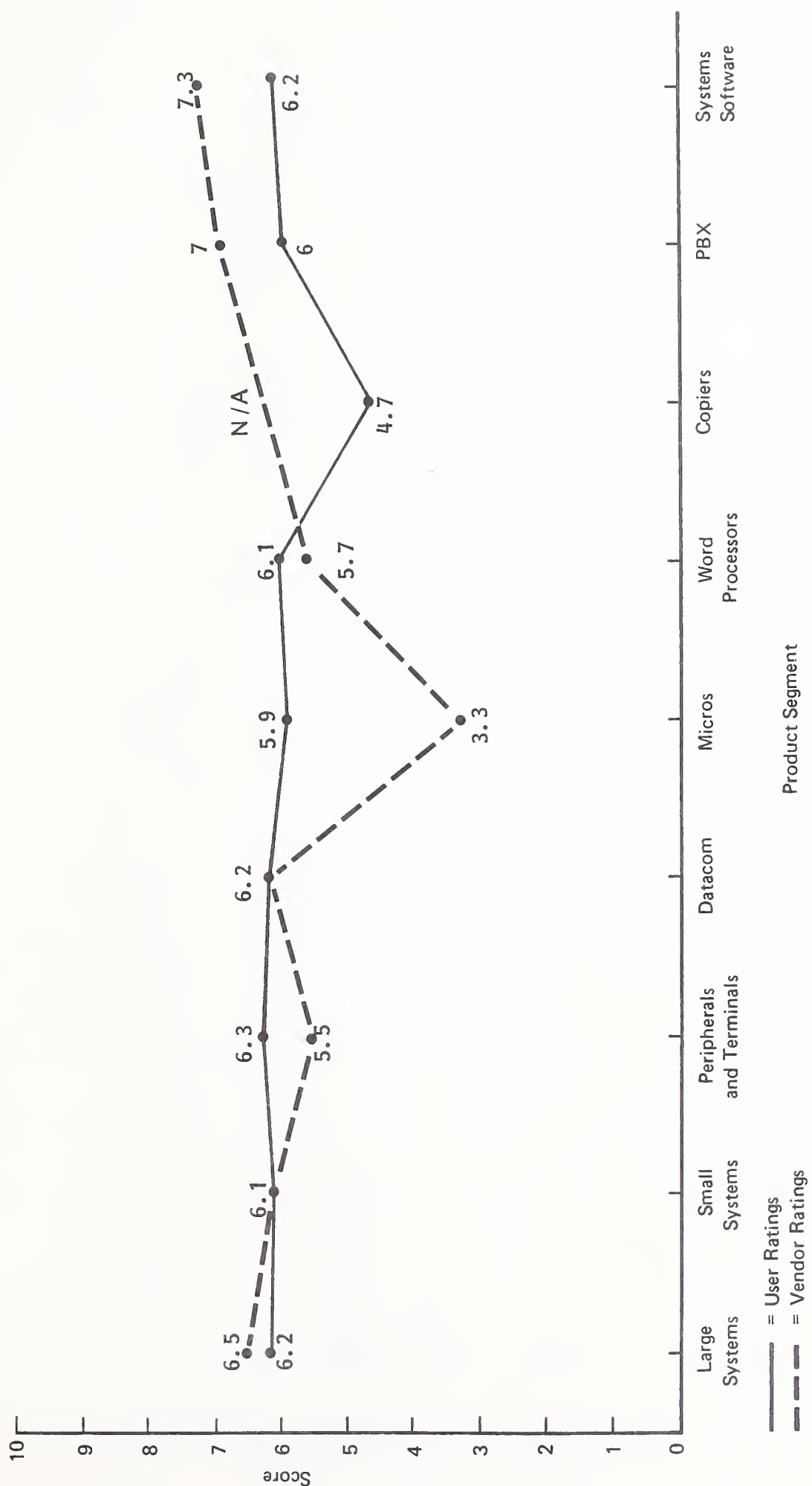
EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY - AVAILABILITY OF SPARE PARTS



1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY -
SOFTWARE SUPPORT CAPABILITY

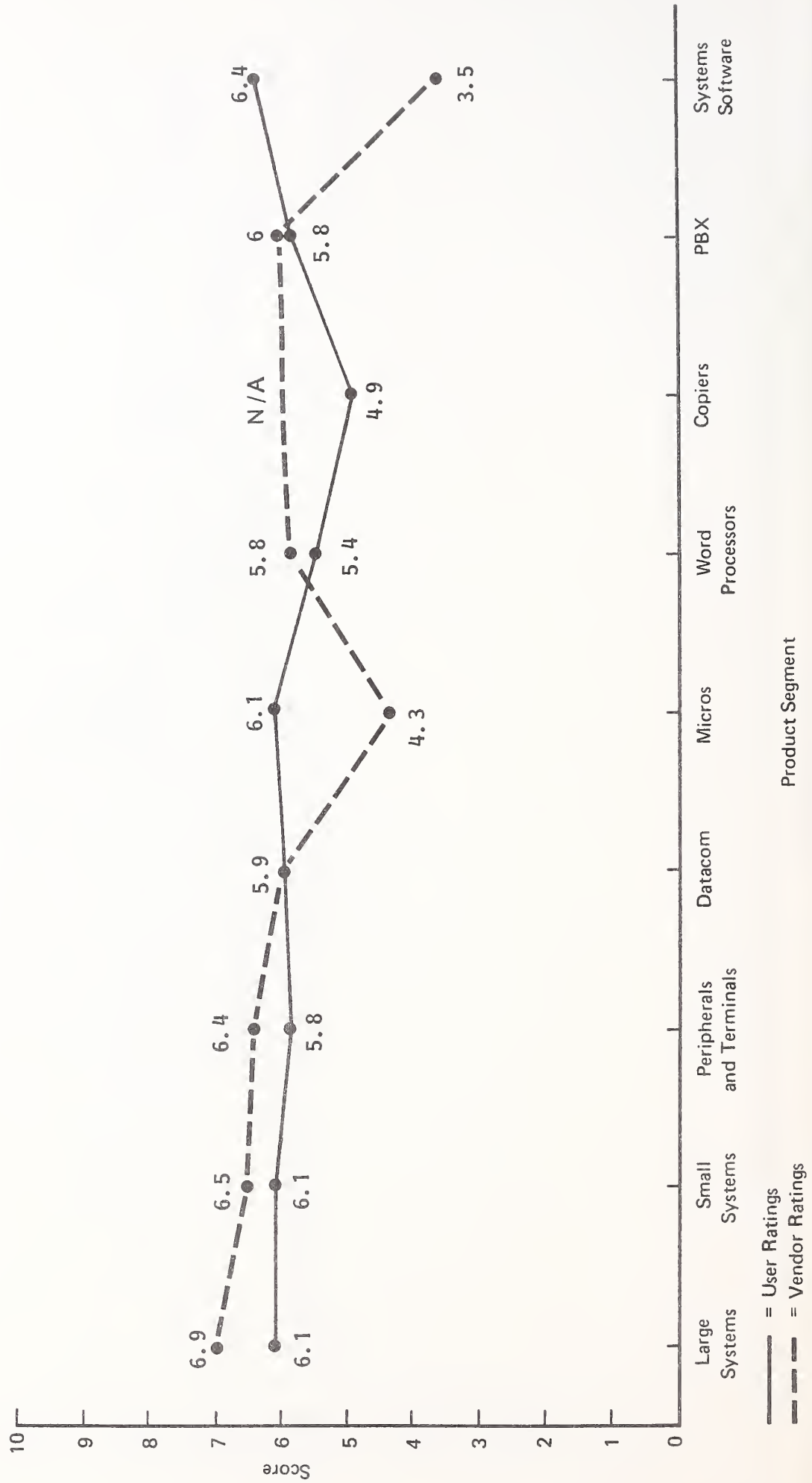


1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

EXHIBIT III-7

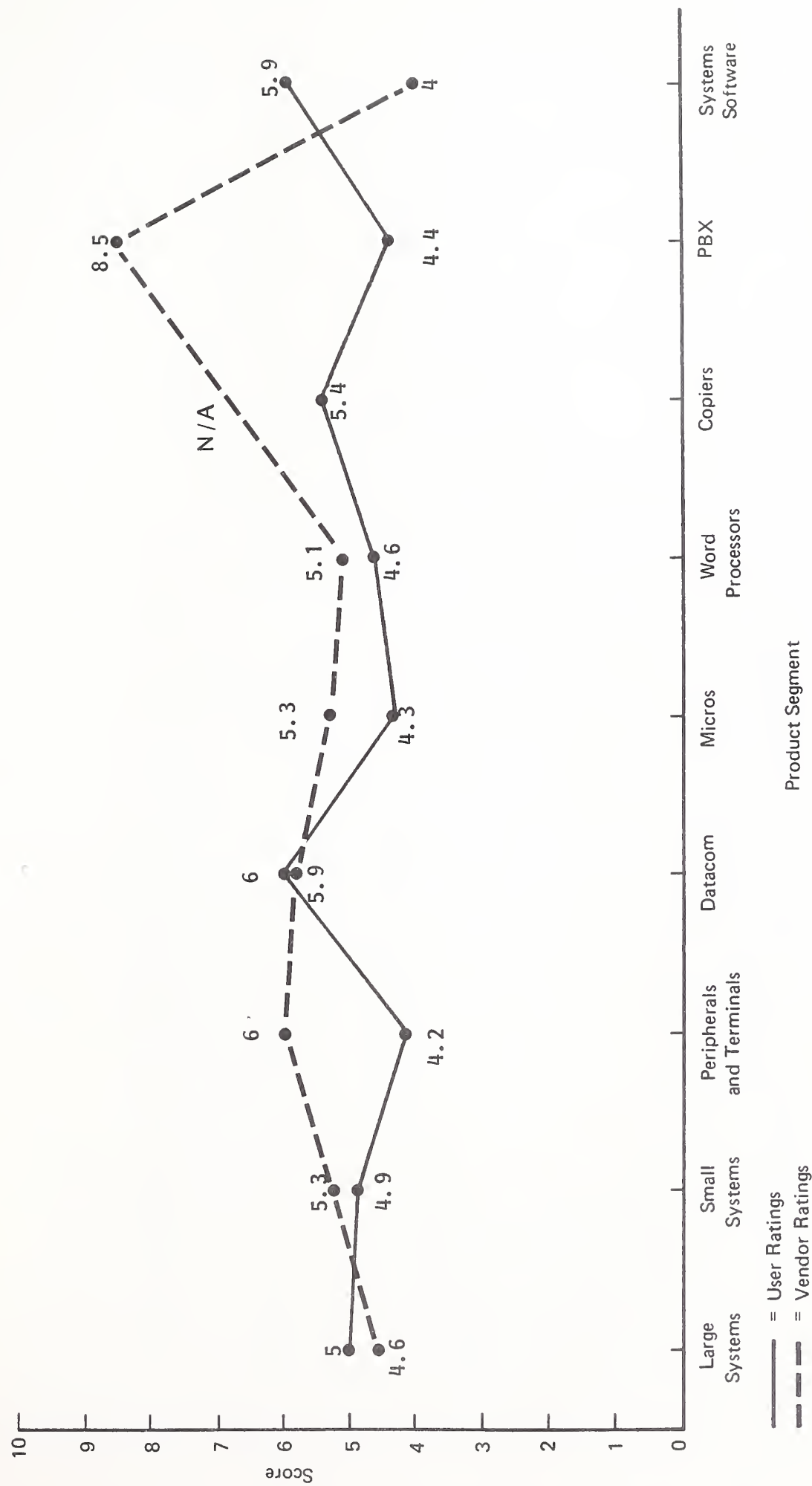
EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY - PREVENTIVE MAINTENANCE EFFECTIVENESS



1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

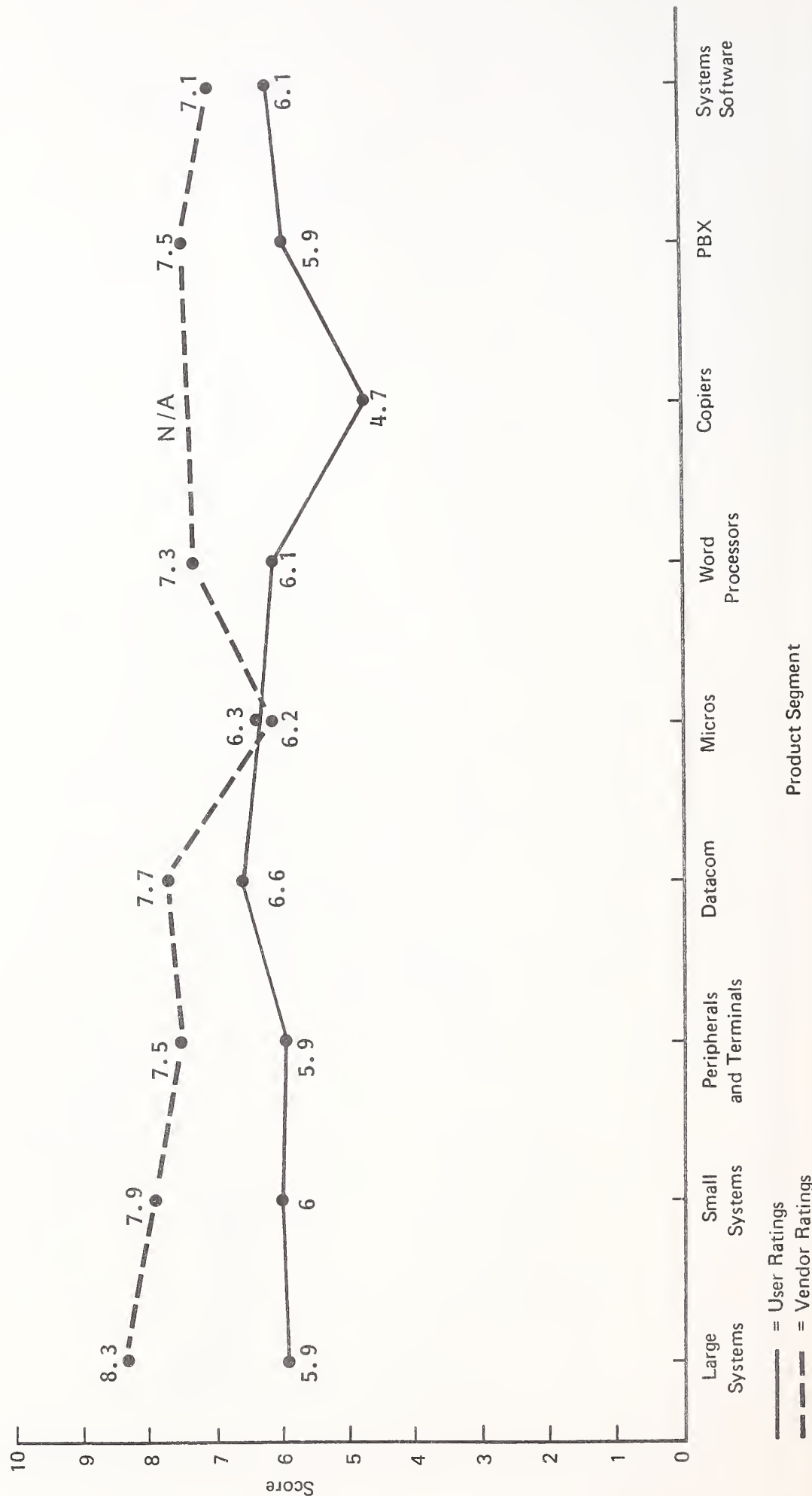
EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY -
REMOTE DIAGNOSTICS



SOURCE: INPUT Survey

EXHIBIT III-9

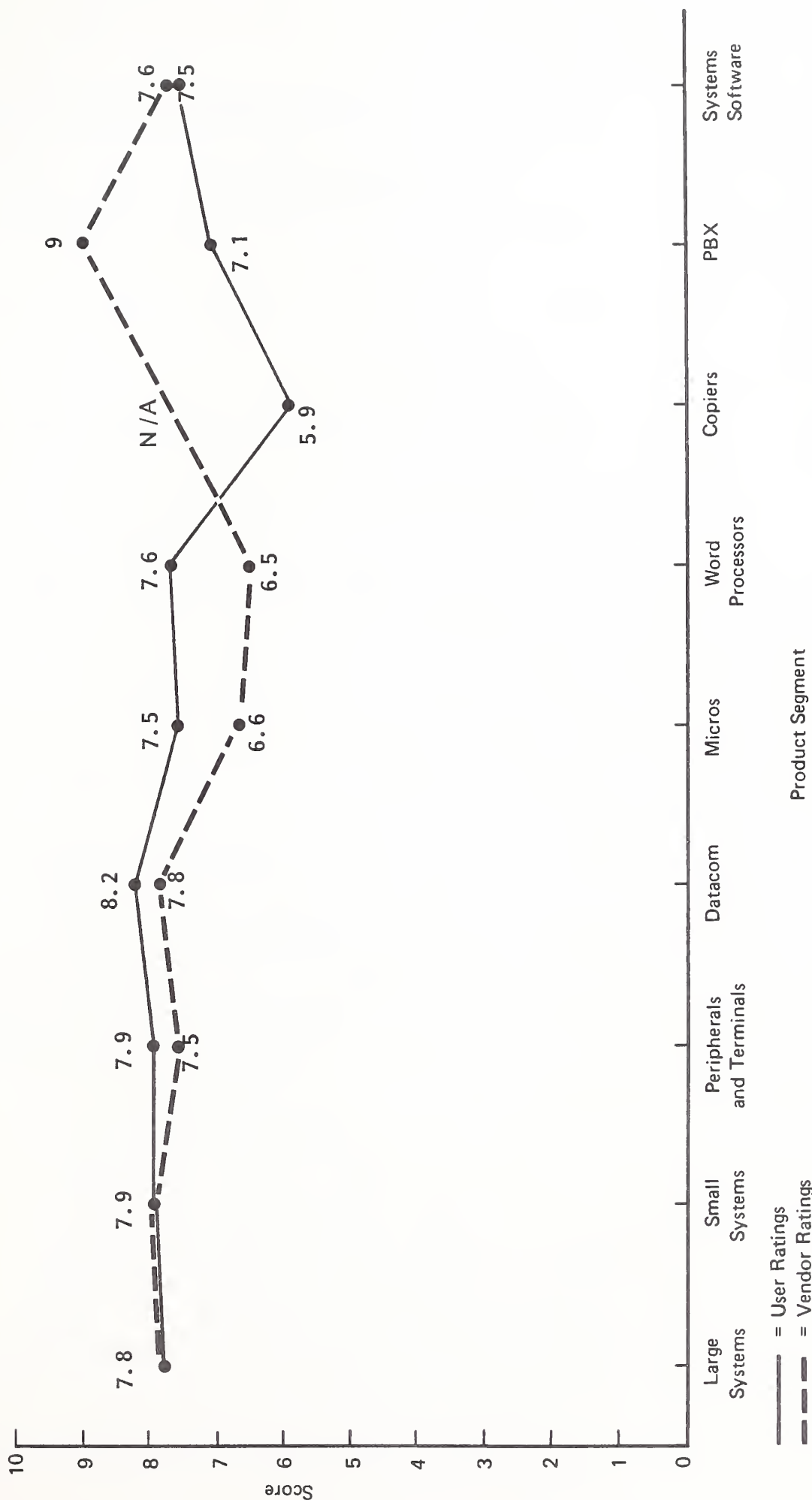
EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY - VALUE OF SERVICE COMPARED TO PRICE



1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE QUALITY -
PRODUCT RELIABILITY



1 = Poor 5 = Average 10 = Excellent

SOURCE: INPUT Survey

- Availability of spare parts (Exhibit III-5) for the following:
 - Peripherals and terminals.
 - Microcomputers.
 - PBX.
 - In almost every case vendors' ratings are higher than users'.
- Software support capability (Exhibit III-6) in the area of:
 - Microcomputers (an area where users very much overrate vendors).
 - PBX.
 - Systems software.
- Effectiveness of preventive maintenance (Exhibit III-7) for:
 - Microcomputers (PM virtually unnecessary).
 - Systems software (users, again, substantially overrate vendors).
- Remote diagnostics (Exhibit III-8) for:
 - Peripherals and terminals.
 - Microcomputers.
 - PBX.
 - (Vendors overrate themselves in almost every case.)

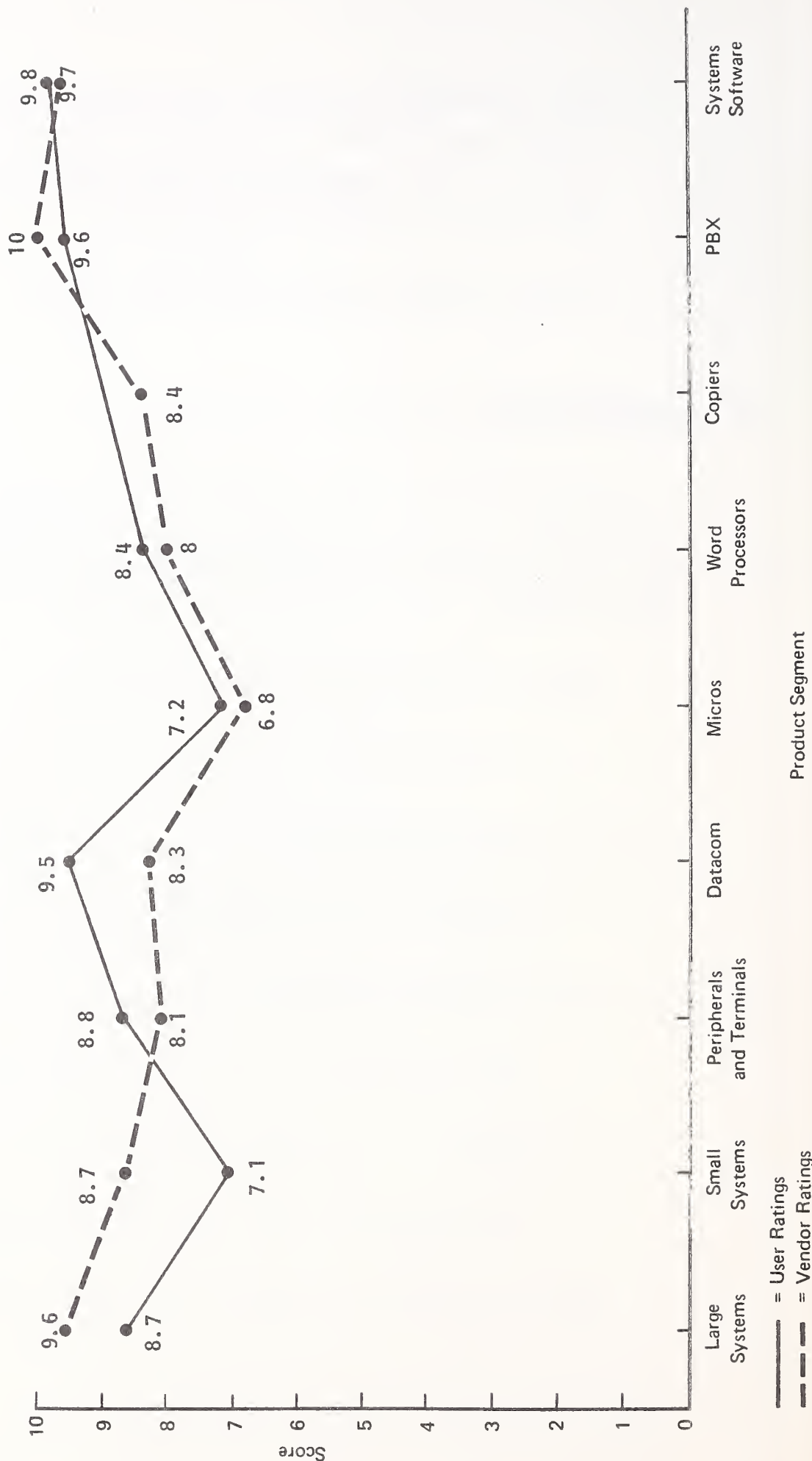
- Value of service compared to price (Exhibit III-9) for all products except microcomputers and copiers (no vendor data). (Significant, nearly unanimous, overrating by vendors will produce market pressures on service prices within the next two years.)
- Product reliability (Exhibit III-10) for PBX systems.

B. SERVICE ISSUES

- Exhibits III-11 through III-21 compare user and vendor perceptions regarding common maintenance issues. Significant differences of opinion show up in the following issues:
 - Systems availability (Exhibit III-11) for:
 - Small systems.
 - Datacommunications.
 - (Vendors underrate themselves.)
 - Repair time (Exhibit III-13) for:
 - Microcomputers.
 - PBX.
 - (In both instances vendors underrate themselves.)
 - Software maintenance (Exhibit III-15) for datacommunications.

EXHIBIT III-11

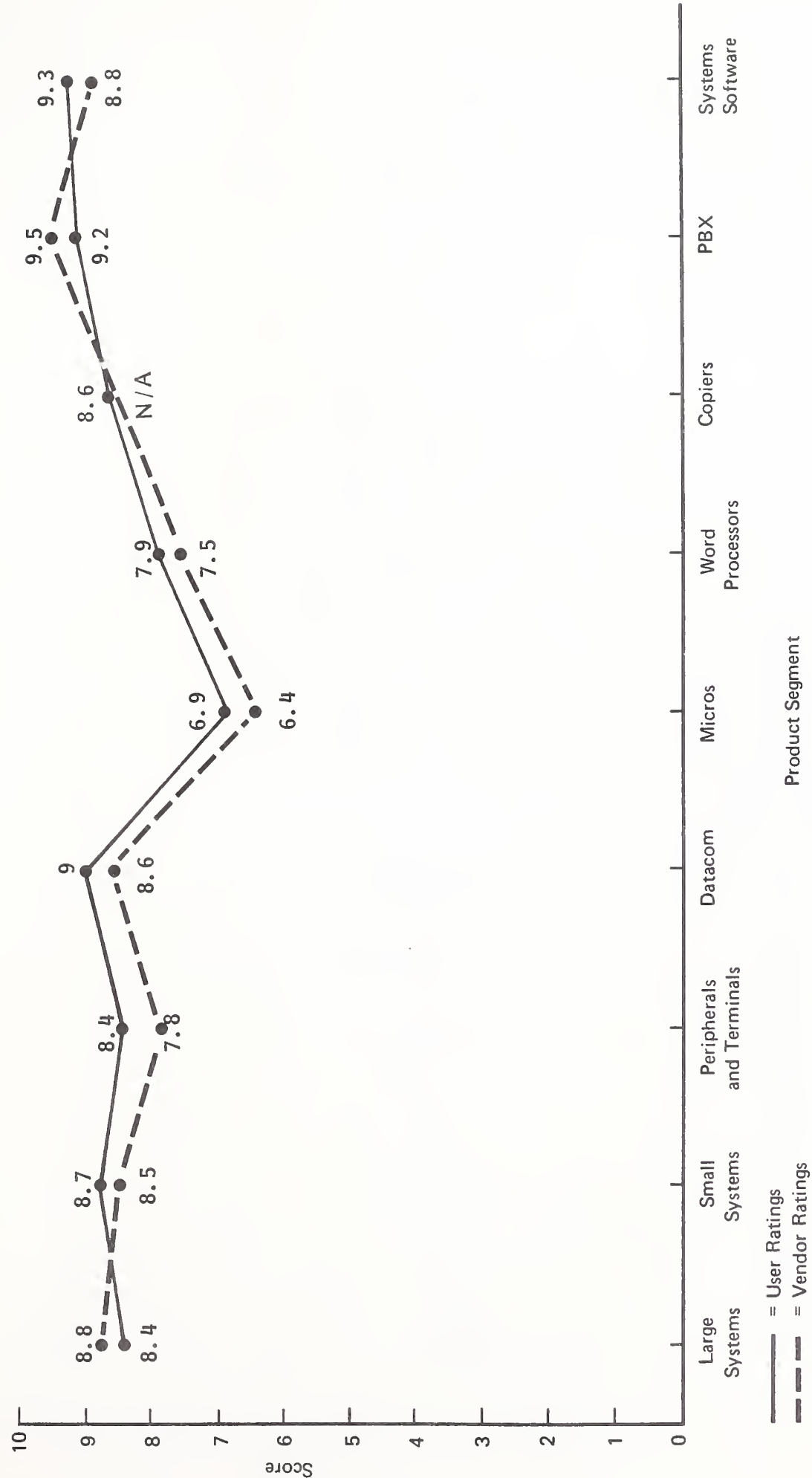
EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES - SYSTEMS AVAILABILITY



Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES -
RESPONSE TIME

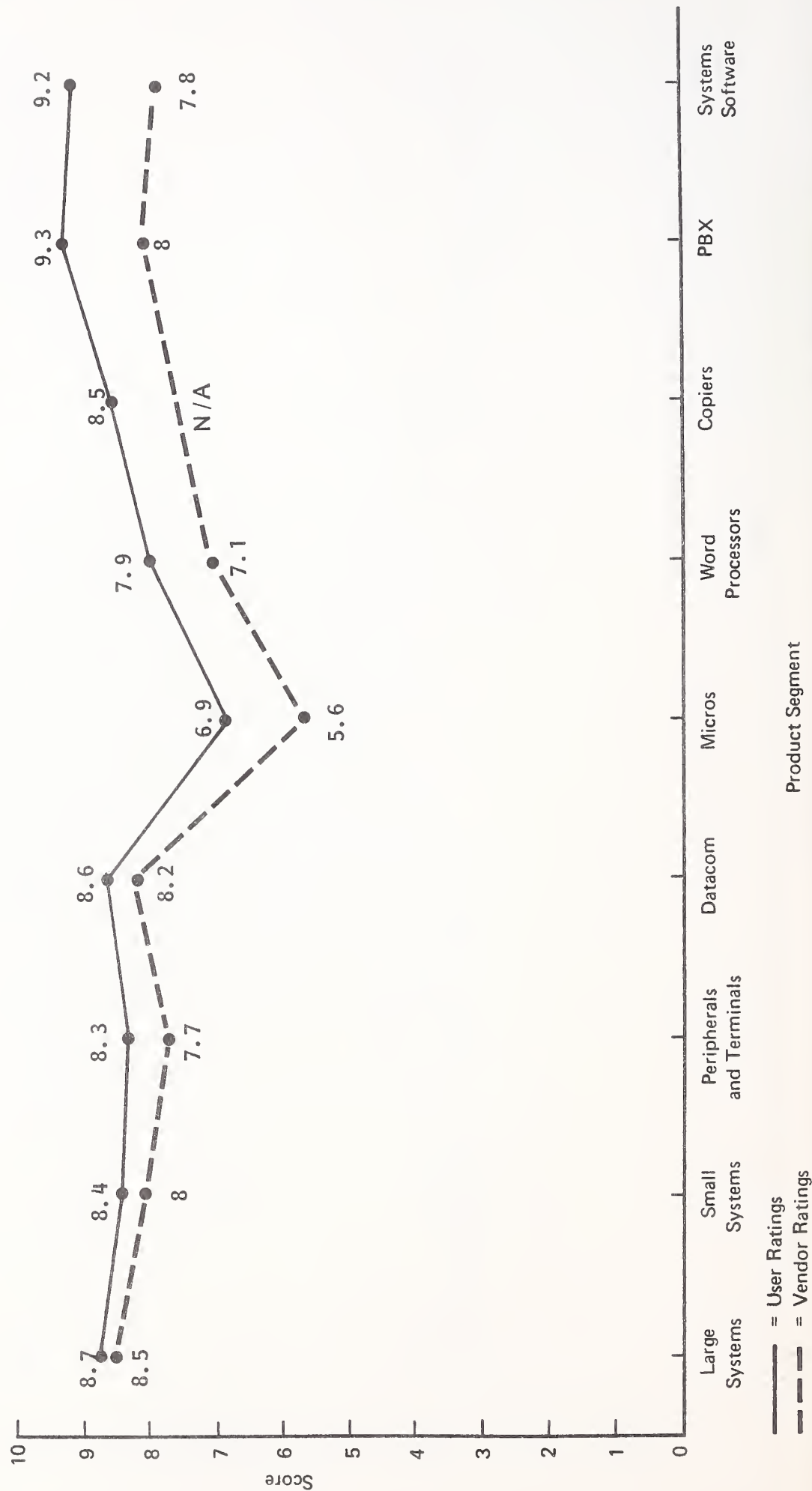


Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EXHIBIT III-13

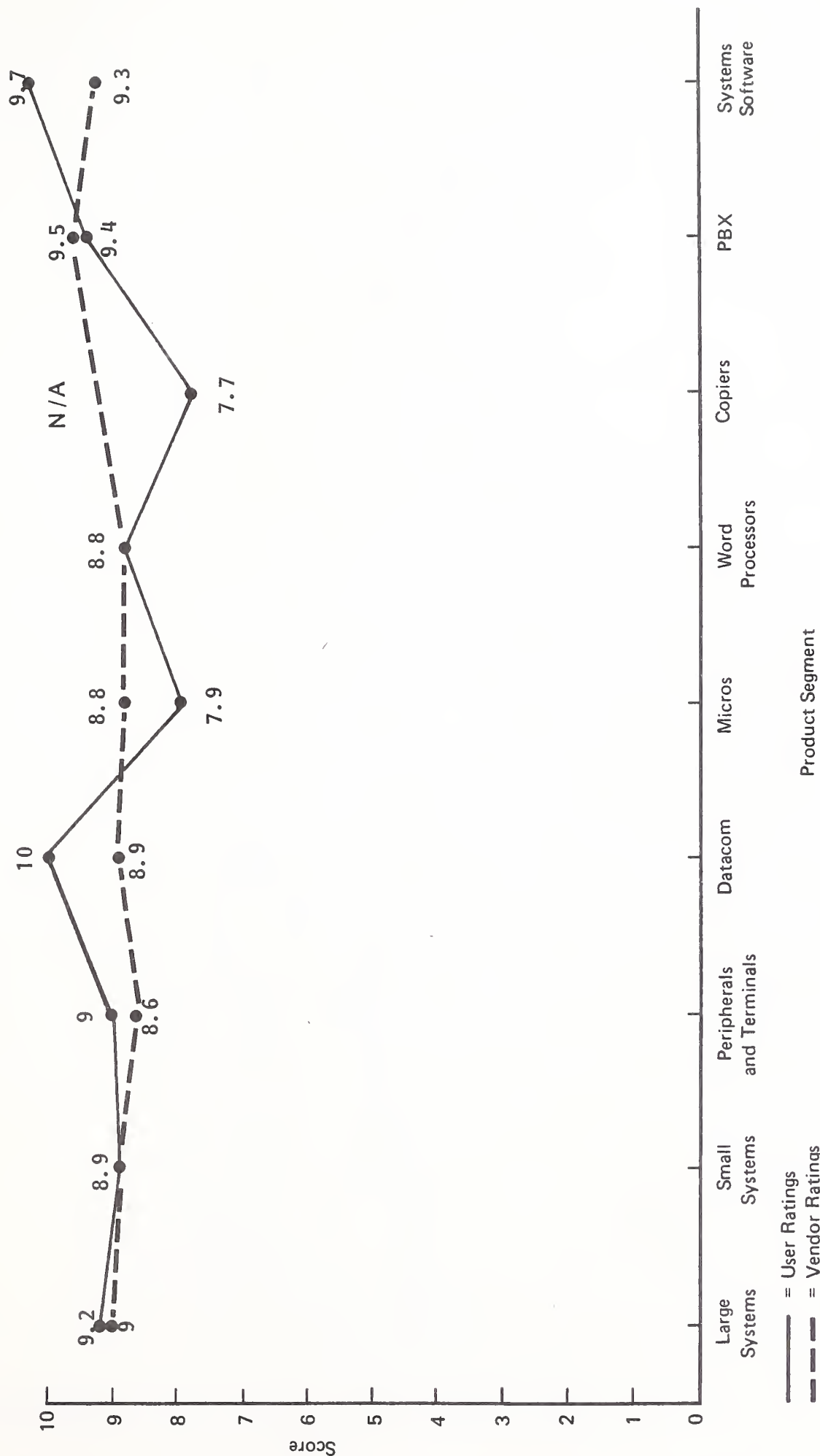
EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES - REPAIR TIME



Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES - EQUIPMENT RELIABILITY

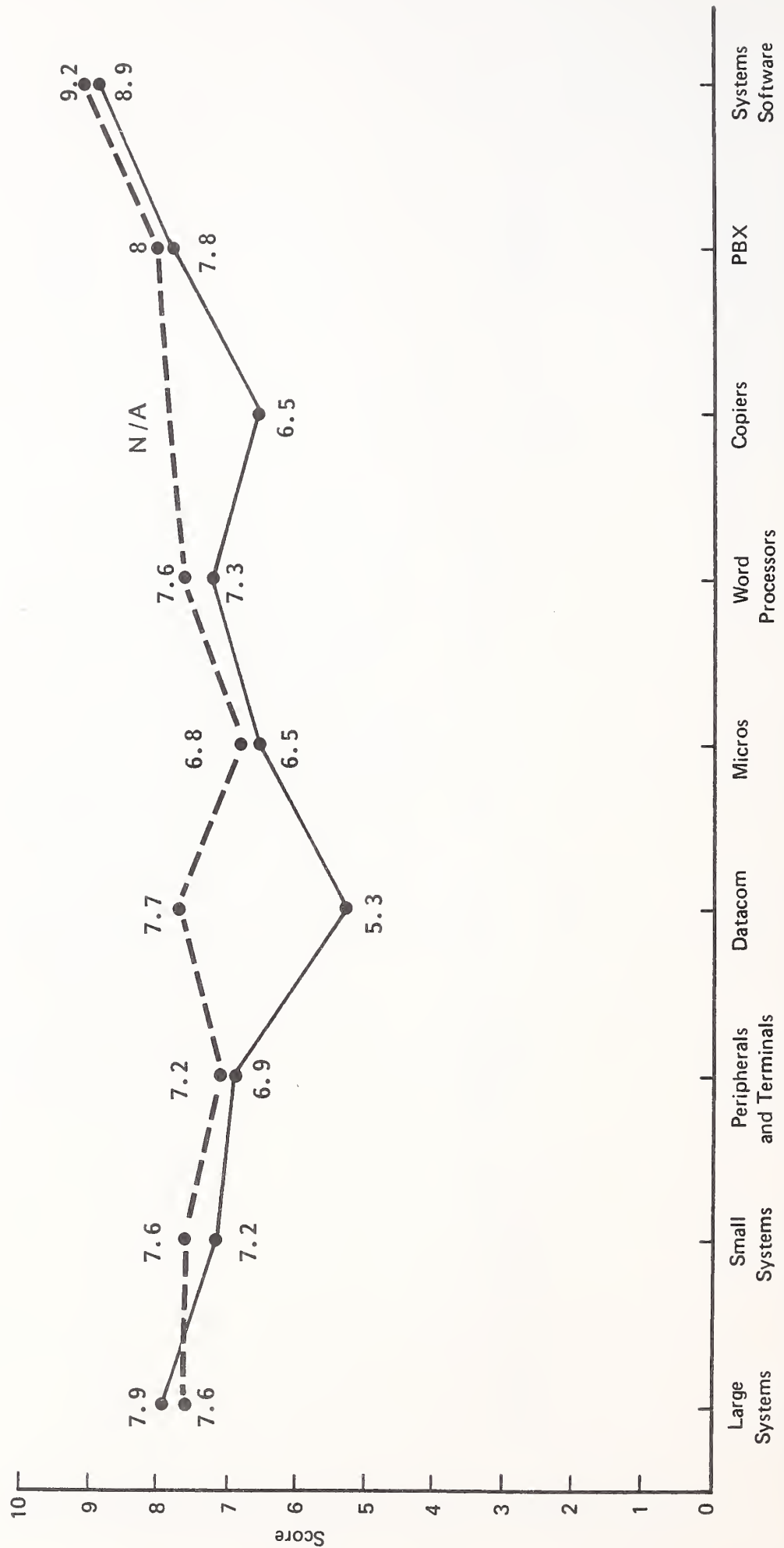


Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EXHIBIT III-15

EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES - SOFTWARE MAINTENANCE

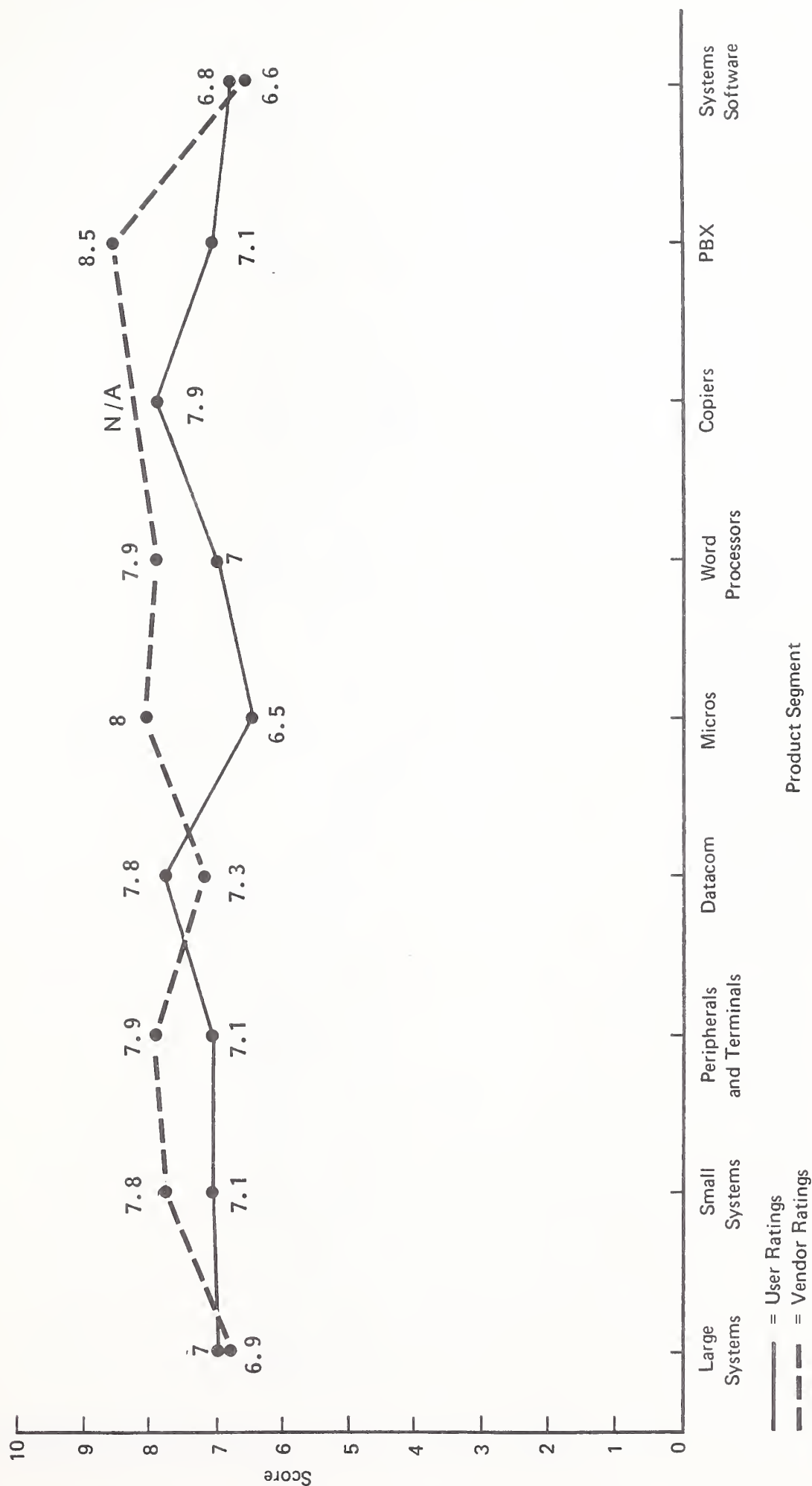


— = User Ratings
 - - - = Vendor Ratings

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES -
PRICE OF MAINTENANCE

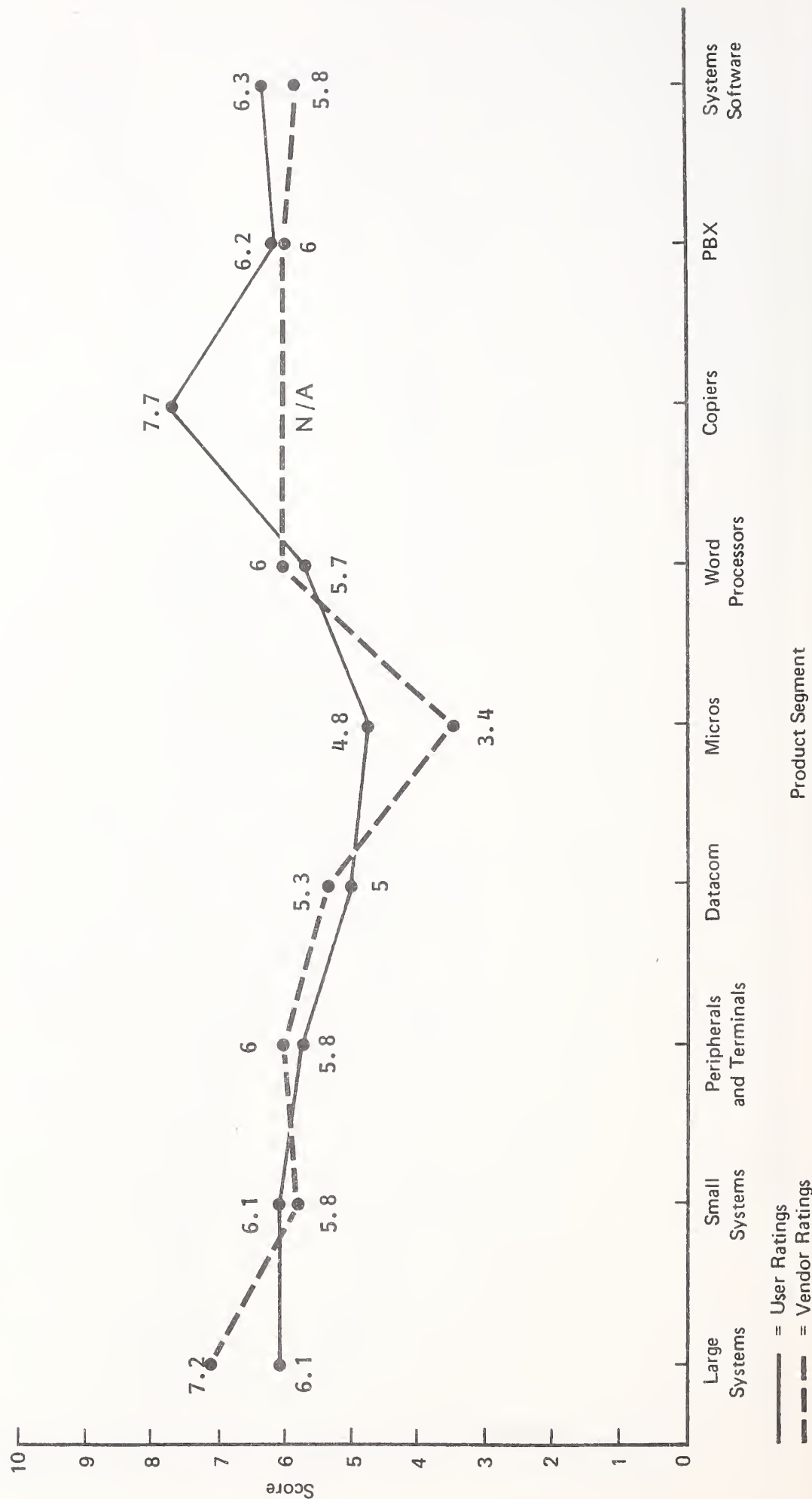


Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EXHIBIT III-17

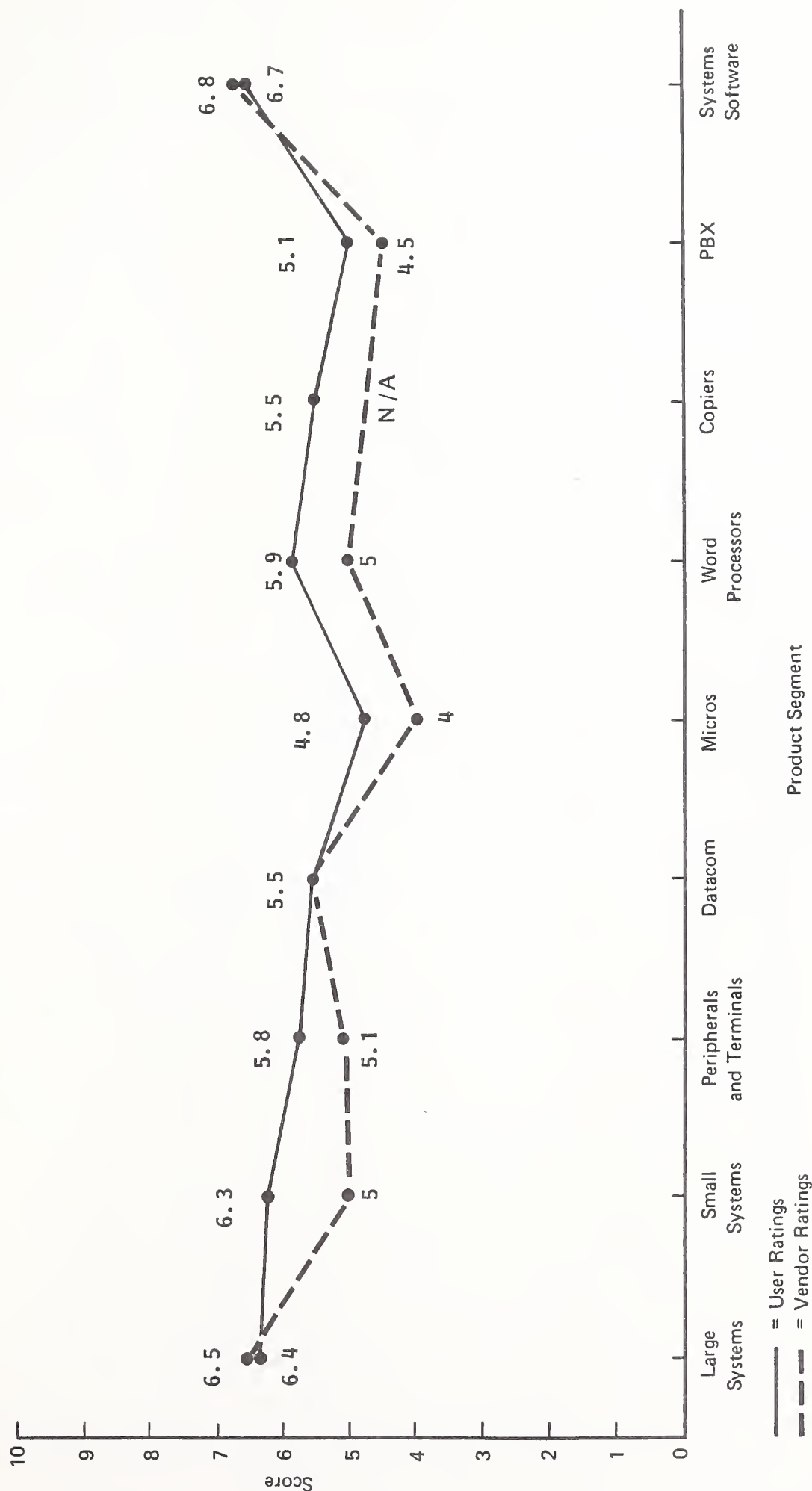
EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES - PREVENTIVE MAINTENANCE



Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES -
HAVING SAME ENGINEER EACH CALL

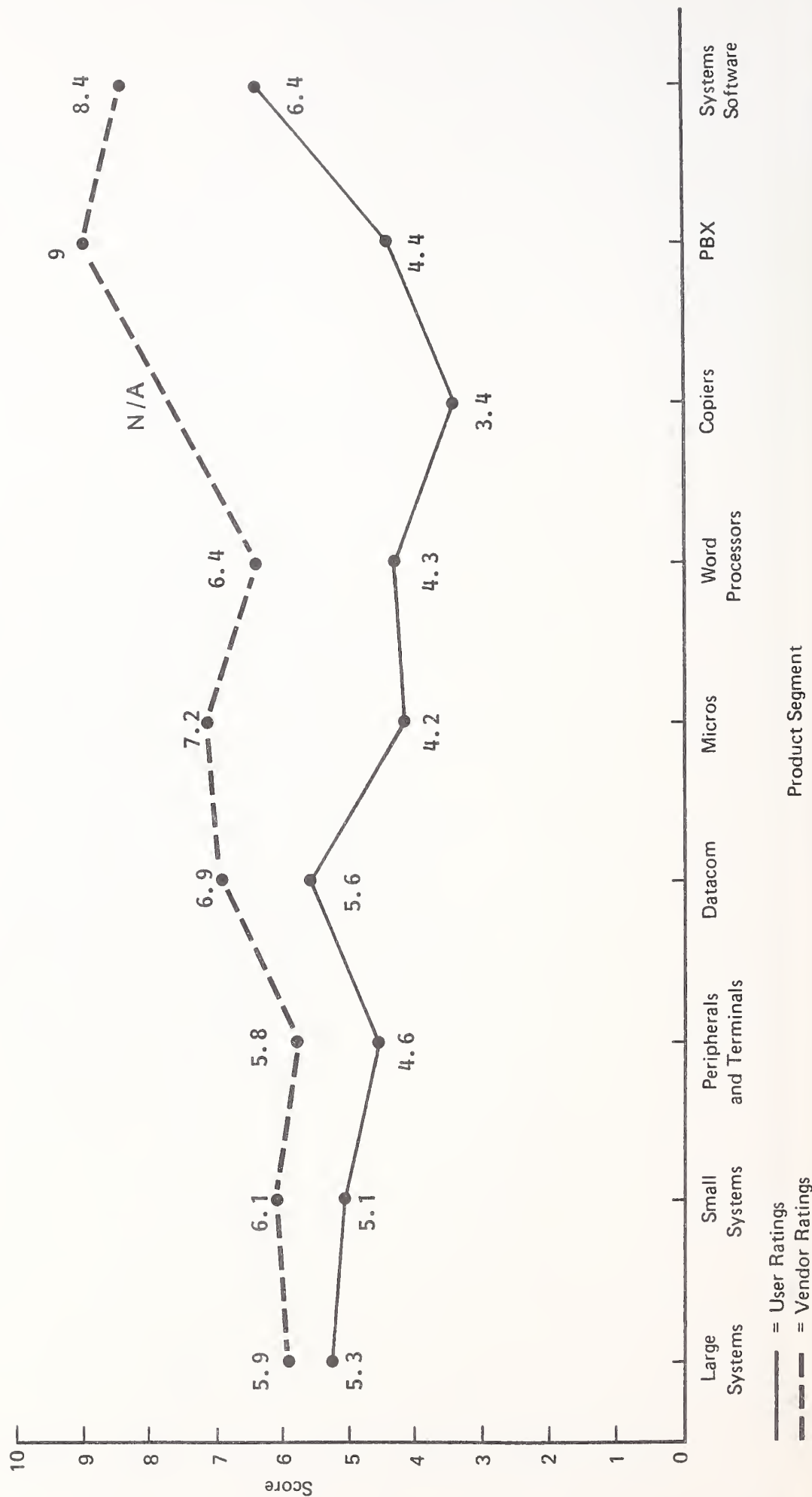


Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EXHIBIT III-19

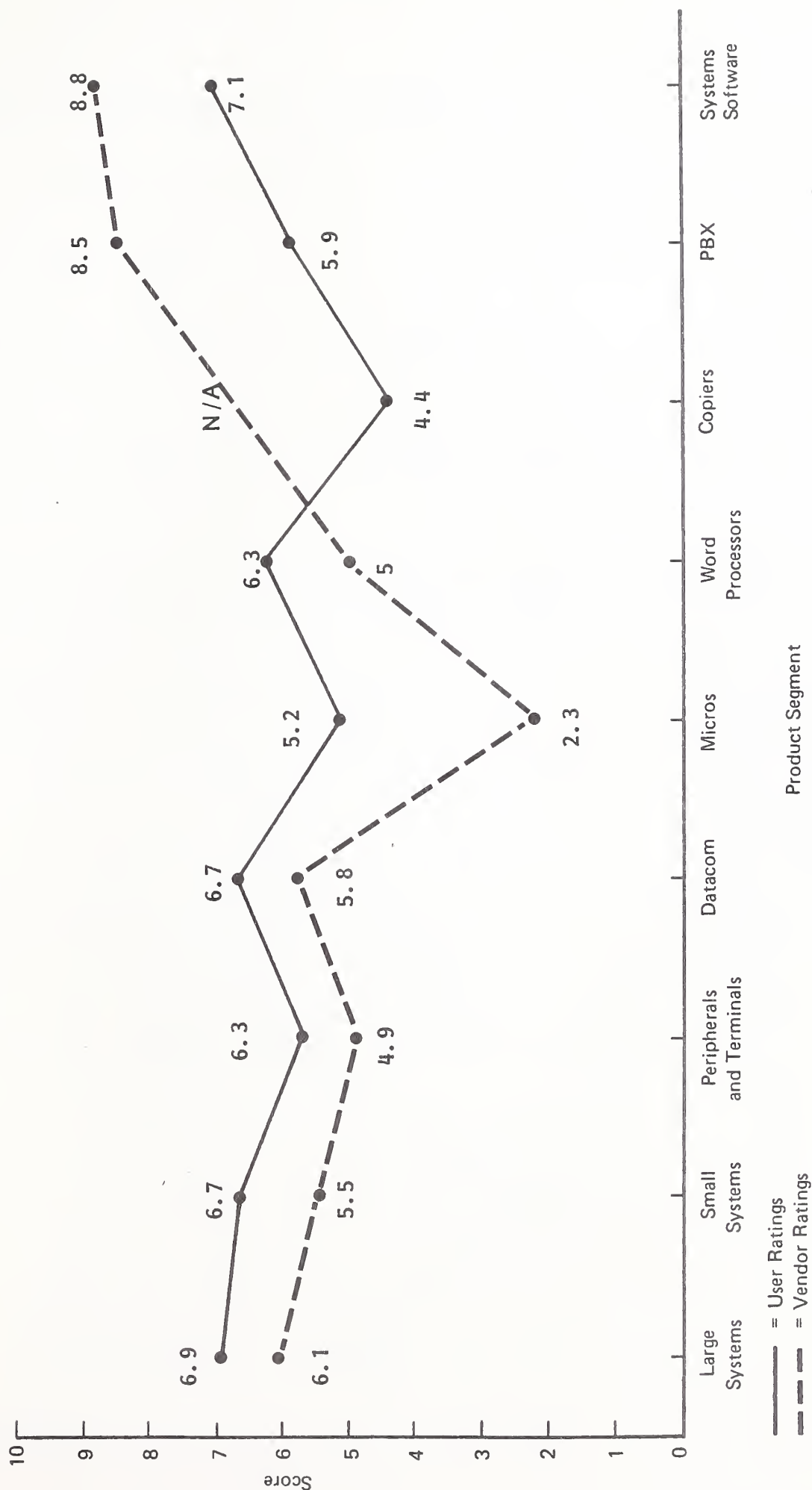
EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES - REMOTE DIAGNOSTICS



Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES -
UPTIME GUARANTEES

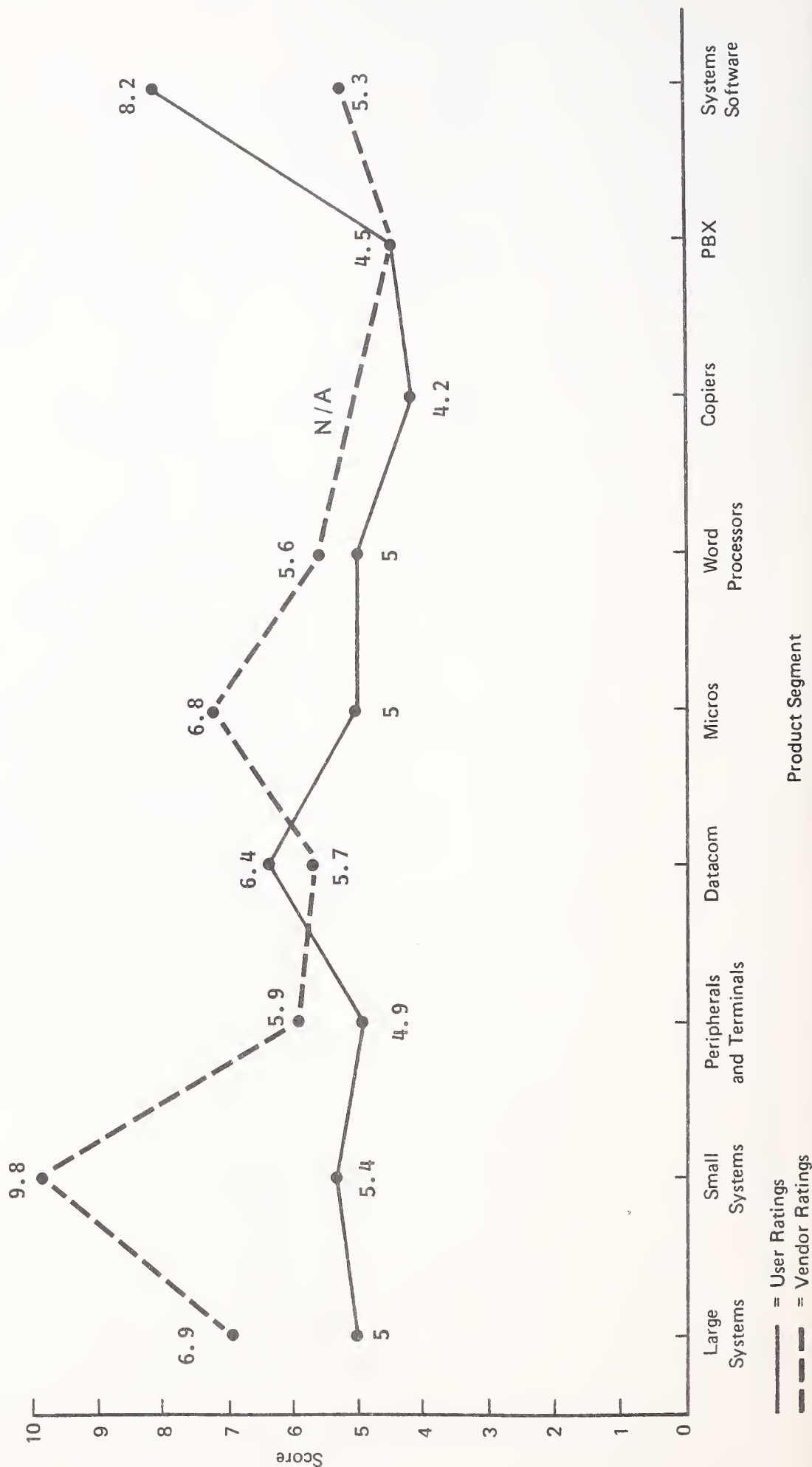


Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EXHIBIT III-21

EUROPEAN USER AND VENDOR RATINGS OF SERVICE ISSUES - HAVING A CHOICE FOR SERVICE



Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

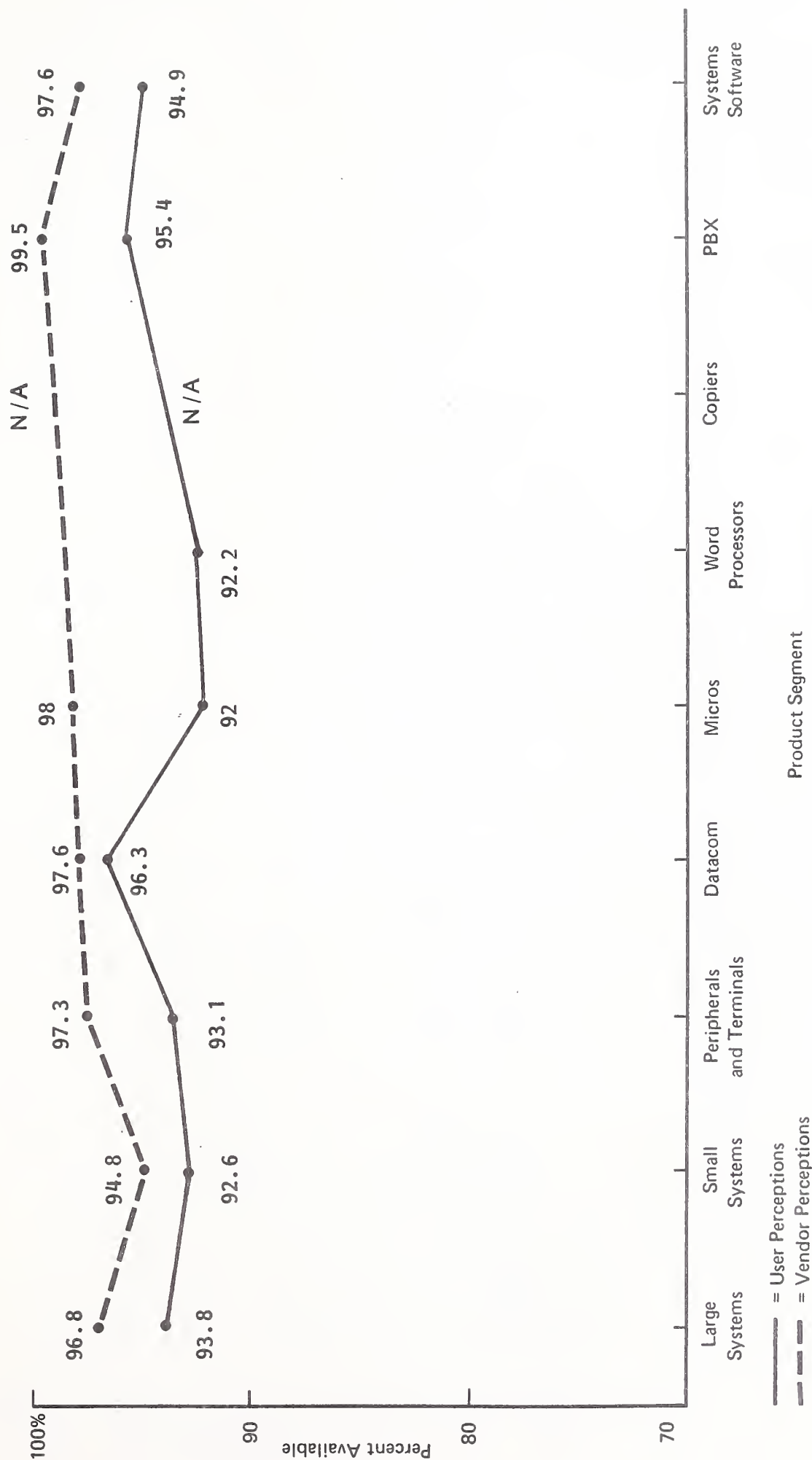
- Price of maintenance (Exhibit III-16) for:
 - Microcomputers.
 - PBX.
- Preventive maintenance for microcomputers (Exhibit III-17) (vendors underrate this).
- Having the same engineer handle each call (Exhibit III-18) for small systems.
- Remote diagnostics (Exhibit III-19) is significantly overrated by vendors in all product categories with the exception of large systems.
- Uptime guarantees (Exhibit III-20) for:
 - Peripherals and terminals (vendors underrate it).
 - Small systems (vendors underrate it).
 - Microcomputers (vendors underrate it).
 - Word processors (vendors underrate it).
 - PBX (vendors overrate it).
- Having a choice for service (Exhibit III-21) for:
 - Large and small systems.
 - Peripherals and terminals.

- . Microcomputers.
- . Systems software (vendors underrate it).

C. AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

- Important differences exist between users' and vendors' ideas of how much system availability is currently provided, as shown in Exhibit III-22. Vendors are urged to address these discrepancies either by:
 - Keeping customers updated with factual data that support their perceptions.
 - Improving on availability that may, in fact, be deficient.
 - In either case, vendors are obliged to do a better job of communicating to users.
- Exhibit III-23 shows the discrepancies in the two groups' perception of ideal system availability. These differences are not as significant (each side has its own rationale) as the differences in minimum acceptable performance. As shown in Exhibit III-24, vendors consistently overrate stretch-level availabilities. There may be an opportunity here for vendors to relax availability standards, which would mean reducing the cost of service. The problem is to relay standards without alienating the customer. A case-by-case analysis, customer-by-customer, is recommended.
- Users' and vendors' perceptions of response and repair times are shown in Exhibit III-25 and III-26 respectively. Actual experience is similar for:

EUROPEAN USER AND VENDOR PERCEPTIONS OF CURRENT SYSTEM AVAILABILITY (Percent)

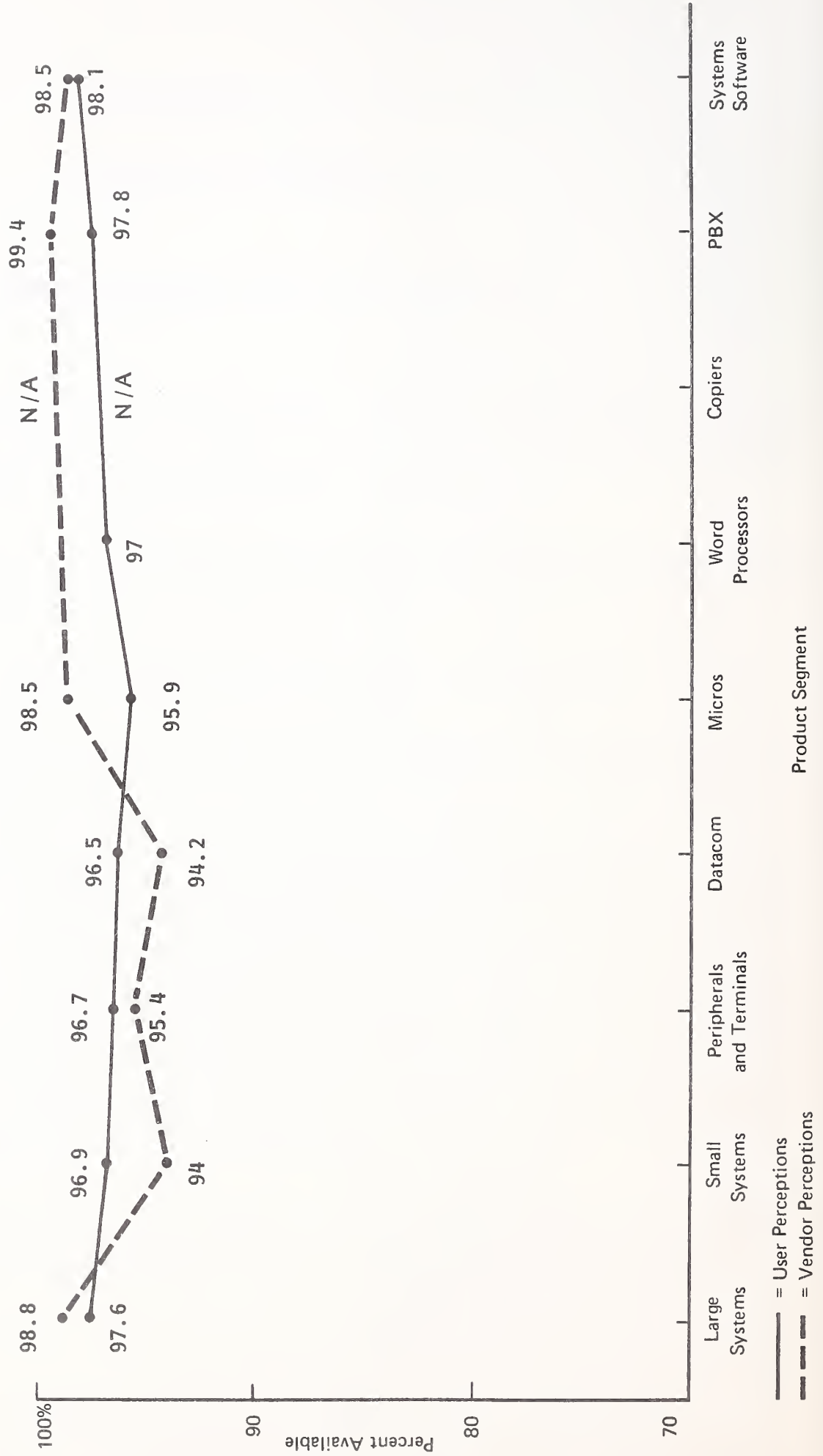


SOURCE: INPUT Survey

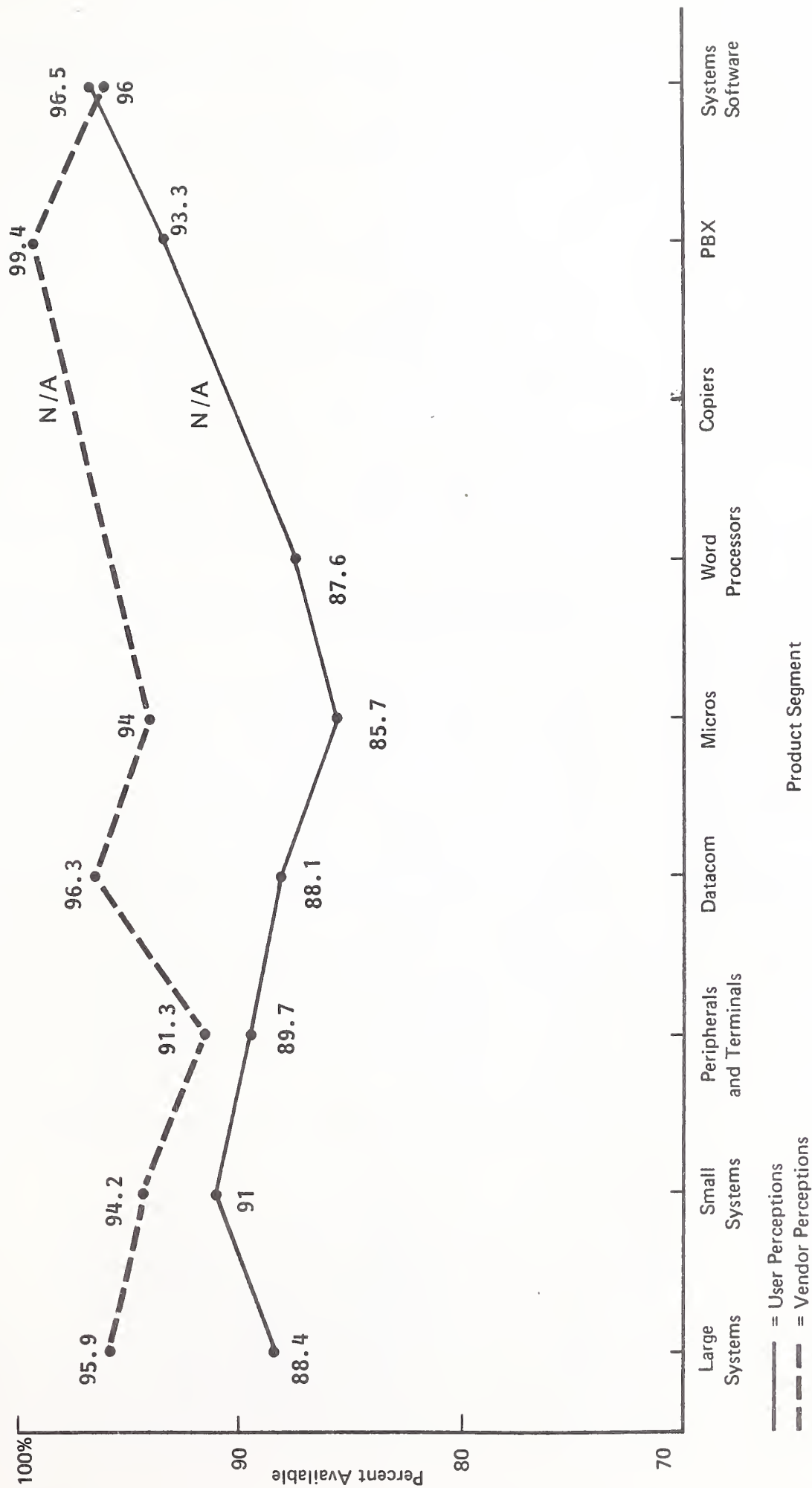
EXHIBIT III-23

EUROPEAN USER AND VENDOR PERCEPTIONS OF IDEAL SYSTEM AVAILABILITY

(Percent)



EUROPEAN USER AND VENDOR PERCEPTIONS OF MINIMUM ACCEPTABLE SYSTEM AVAILABILITY (Percent)



SOURCE: INPUT Survey

EXHIBIT III-25

USER AND VENDOR PERCEPTIONS

OF RESPONSE TIME

(Hours from First Call)

	VENDORS THINK:			USERS THINK:		
	They Now Provide	Users' Ideal Is	Users' TOP* Is	They Now Get	Ideal Is	TOP* Is
Large Systems	3.5	2.4	6.1	3.5	2.0	5.1
Small Systems	5.5	6.0	10.6	6.0	3.1	8.9
Peripherals and Terminals	9.2	8.7	14.3	6.5	3.0	10.1
Data Communications	7.8	7.0	15.2	7.7	2.7	9.7
Microcomputers	9.0	7.0	21.5	10.2	6.7	16.7
Word Processors	N/A	N/A	N/A	6.9	2.3	9.3
PBAX	2.0	0.0	2.0	6.5	1.7	2.9
Copiers	N/A	N/A	N/A	5.7	1.8	5.6
Systems Software	9.8	8.1	11.3	6.7	2.4	7.5

*TOP = Threshold of Pain (Maximum Available)

SOURCE: Input Survey

USER AND VENDOR PERCEPTIONS
OF REPAIR TIME
(Hours from Arrival)

	VENDORS THINK:			USERS THINK:		
	They Now Provide	Users' Ideal Is	Users' TOP* Is	They Now Get	Ideal Is	TOP* Is
Large Systems	2.2	1.1	3.0	2.9	2.2	5.7
Small Systems	1.7	1.4	3.4	3.3	2.3	6.2
Peripherals and Terminals	1.8	1.2	9.1	3.1	1.9	7.0
Data Communications	1.5	1.4	3.0	3.0	1.6	4.7
Microcomputers	1.4	1.0	3.0	5.2	3.3	12.1
Word Processors	N/A	N/A	N/A	3.0	1.5	6.3
PBAX	1.2	1.0	4.3	3.9	2.9	6.9
Copiers	N/A	N/A	N/A	N/A	N/A	N/A
Systems Software	-	-	-	8.6	4.4	7.9

*TOP = Threshold of Pain (Maximum Available)

SOURCE: Input Survey

- Large systems.
- Small systems.
- Datacommunications.
- Microcomputers.
- There are major discrepancies in the areas of:
 - Peripherals and terminals.
 - PBX.
 - Systems software.
- Similarly, users and vendors can agree on actual repairs for large and small systems. However, discrepancies are indicated for PBAX and microcomputers.
- New methods of delivering service (i.e., repair centres, technical assistance, remote diagnostics, participatory service, etc.) affect response and repair times and the perceptions thereof. (Specifically, there is now less customer emphasis on repair and response time. If a customer receives help several times over the phone, telex, or downline, and this is followed by a site visit much later, then the customer's opinion of responsiveness is going to be based on more than just the elapsed time it took the service engineer to arrive.

D. PRICING

- As shown in Exhibit III-27, users and vendors have different ideas with respect for actual price increases received in 1982, expectations for 1983 increases, and maximum tolerable increases for 1983.

USER AND VENDOR PERCEPTIONS OF PRICING

	VENDORS THINK: (Percent)			USERS THINK: (Percent)		
	Last Year's Increase Was	This Year Will Be	Users' TOP* Is	Last Year's Increase Was	This Year Will Be	TOP* Is
Large Systems	4.0%	4.0%	8.0%	8.0%	7.2%	10.0%
Small Systems	5.0	5.0	9.0	7.9	7.6	10.4
Peripherals and Terminals	6.0	5.0	9.0	8.0	6.9	10.0
Data Communications	4.0	6.0	9.0	6.6	5.6	8.8
Microcomputers	4.0	3.0	7.0	6.6	6.9	10.2
Word Processors	3.0	5.0	7.0	6.7	7.0	9.6
PBAX	-	-	-	4.1	4.7	7.6
Copiers	-	-	-	6.6	4.0	10.1
Systems Software	6.0	5.0	11.0	7.3	7.8	11.3

*TOP = Threshold of Pain (Maximum Available)

SOURCE: Input Survey

- Most important are the actual (perceived) increases for 1982. In every case users thought they received price increases higher than the ones vendors really imposed. This is another example of why improved communications are necessary.
 - On the one hand, perceived increases, sometimes double what vendors actually imposed, can endanger relationships between user and vendor because users feel they are getting oppressive increases year after year.
 - On the other hand, if users think they received higher increases, vendors could raise their prices by a larger amount and probably get away with it.

E. SERVICE CONTRACTS

- Exhibits III-28 through III-34 analyse user and vendor attitudes towards service contracts, offerings, and options.
- Exhibit III-28 shows a potential market for newer, extra, or improved services. (Price ranges are in terms of percentage additions to the basic monthly charge.)
 - Users, cautiously, are ready to spend up to one percent of base maintenance for most options listed. Exceptions are more personalised service for microcomputers and PBAX, software enhancements for datacommunication, and most options suggested for copiers.
 - While seemingly small, these ideas could yield important new revenues if developed further.

USER AND VENDOR PERCEPTIONS OF
EXTRA/IMPROVED SERVICE

	VENDOR WILLING TO OFFER:					
	Guaranteed Uptime	Guaranteed Response Time	Guaranteed Turnaround Time on Software	Software Consulting	Software Enhancements	Personalised Service
Large Systems	4.0	3.0	2.0	2.0	3.0	5.0
Small Systems	4.0	3.0	3.0	3.0	3.0	4.0
Peripherals and Terminals	3.0	3.0	3.0	2.0	3.0	4.0
Data Communications	4.0	3.0	2.0	3.0	2.0	3.0
Microcomputers	4.0	3.0	1.0	1.0	1.0	2.0
Word Processors	4.0	2.0	0.0	5.0	5.0	5.0
PBAX	5.0	5.0	0.0	5.0	5.0	6.0
Copiers	N/A	N/A	N/A	N/A	N/A	N/A
Systems Software	0.0	0.0	5.0	3.0	4.0	5.0

Rating: 1 = Unwilling, 10 = Willing

Continued
SOURCE: Input Survey

EXHIBIT III-28 (Cont.)

USER AND VENDOR PERCEPTIONS OF
EXTRA/IMPROVED SERVICE

	USER WILLING TO PAY FOR:					
	Guaranteed Uptime	Guaranteed Response Time	Guaranteed Turnaround Time on Software	Software Consulting	Software Enhancements	Personalised Service
Large Systems	2.1	2.1	1.9	1.9	1.9	1.8
Small Systems	2.2	2.1	1.8	1.8	1.9	2.0
Peripherals and Terminals	2.0	2.0	1.8	1.6	1.7	1.7
Data Communications	2.2	2.4	1.8	1.6	1.4	1.8
Microcomputers	2.3	1.8	1.6	1.7	2.0	1.4
Word Processors	1.9	1.8	1.7	1.6	1.7	1.6
PBAX	2.7	2.5	2.4	1.9	1.7	1.4
Copiers	1.4	1.4	1.2	1.2	1.3	1.5
Systems Software	2.3	2.2	2.2	2.1	2.3	2.4

Rating: 1 = None, 2 = Up to 1% Basic Charge, 3 = Up to 5% Basic Charge

- PBX guarantees for uptime and service represent good opportunities with up to five percent potential additional price adjustments.
- The important point here is that users indicate by their responses that they are willing to buy these options.
- Other potential new opportunities are implicit in Exhibit III-29, which shows users' willingness to participate in service, and vendors' willingness to offer a discount as a consideration. Participatory services can reduce vendor costs much more than they reduce revenue.
 - Generally, most appealing is the diagnostic assistance offered by users.
 - Least attractive is bringing portable units to repair centres. This alternative needs to be better marketed by service vendors since it represents a major cost saving to both vendor and user.
- It is not surprising to see the stronger vendor preference for long-term contracts, automatic renewals, and annual invoicing that is indicated in Exhibits III-30 through III-32. These options favor the vendor by tending to lock in revenues and user terms.
- Exhibit III-34 shows that vendors are very much more in favor of unbundled service contracts. However, a positive and persuasive marketing program is required to motivate the user into thinking in terms of unbundling. Marketing must communicate what elements are included in unbundling and what the benefits are.

EXHIBIT III-29

USER AND VENDOR PERCEPTIONS OF
USER SERVICE ASSISTANCE

	USER WILLING TO AID SERVICER IF A DISCOUNT IS OFFERED FOR:			
	Diagnosis	Board Replacement	Patching Software	Bringing Portable Units to Repair Centre
Large Systems	6.3	4.7	5.6	3.5
Small Systems	7.2	5.6	6.3	4.0
Peripherals and Terminals	7.0	5.9	6.2	4.1
Data Communications	7.0	6.8	4.7	4.5
Microcomputers	7.1	7.0	6.9	5.3
Word Processors	6.4	4.8	5.0	3.3
PBAX	5.3	4.6	4.7	3.6
Copiers	2.5	2.8	3.2	2.2
Systems Software	7.5	6.2	6.8	4.8

Rating: 1 = Unwilling, 10 = Willing

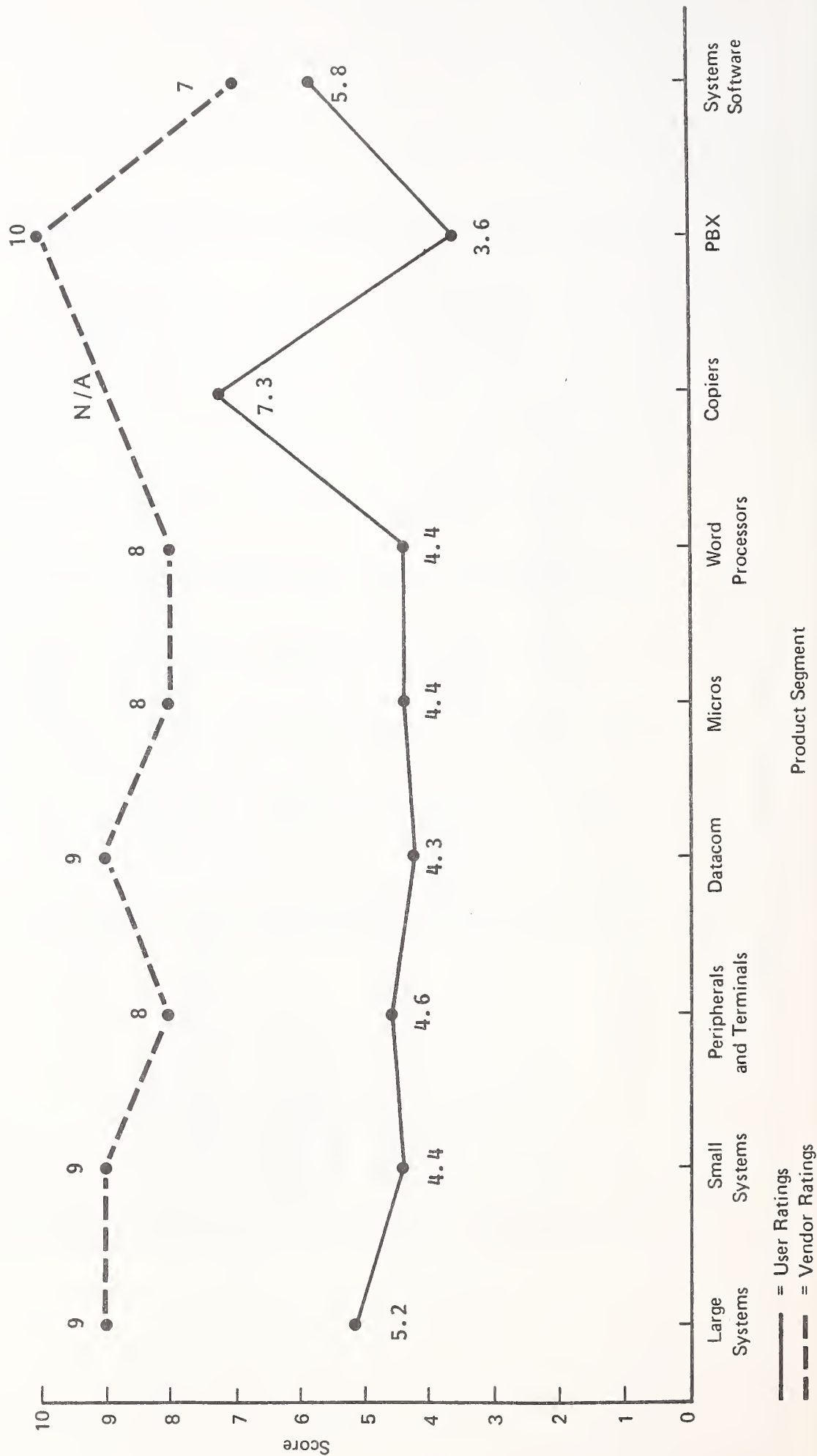
USER AND VENDOR PERCEPTIONS OF
USER SERVICE ASSISTANCE

	VENDOR WILLING TO ALLOW THREE DISCOUNTS FOR USER ASSISTANCE IN:			
	Helping Diagnose	Helping Replace Boards	Helping Patch Software	Taking Portable Units to Repair Centre
Large Systems	7.0	8.0	2.0	19.0
Small Systems	3.0	5.0	4.0	23.0
Peripherals and Terminals	4.0	14.0	1.0	26.0
Data Communications	3.0	6.0	3.0	17.0
Microcomputers	5.0	5.0	0.0	36.0
Word Processors	4.0	12.0	5.0	25.0
PBAX	3.0	13.0	3.0	0.0
Copiers	-	-	-	-
Systems Software	5.0	0.0	10.0	0.0

Rating: 1 = Unwilling, 10 = Willing

SOURCE: INPUT Survey

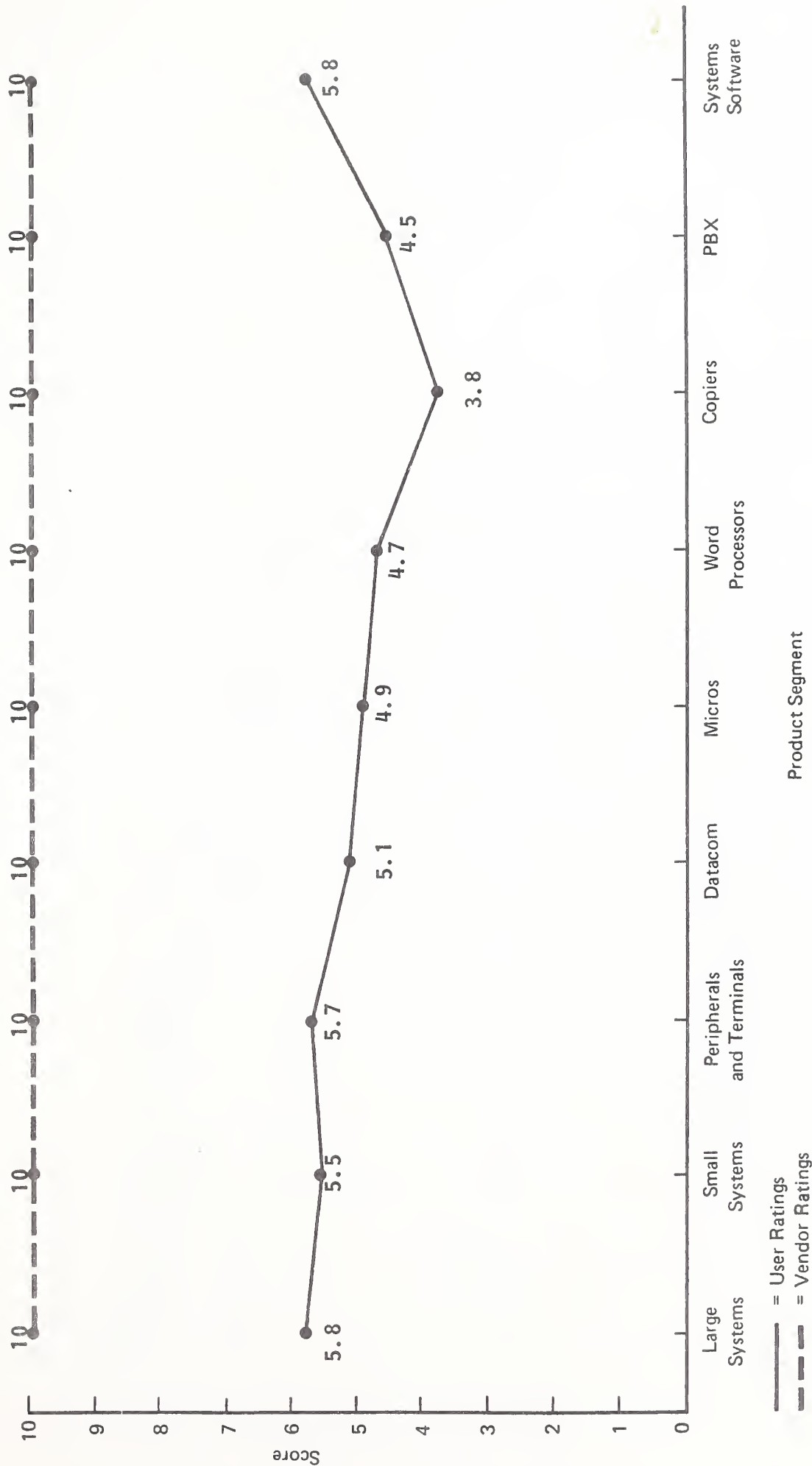
USER AND VENDOR ATTITUDES TOWARDS LONG-TERM CONTRACTS



Rating 1 = Undesirable, 10 = Very Desirable

SOURCE: INPUT Survey

USER AND VENDOR ATTITUDES TOWARDS AUTOMATIC RENEWAL OF SERVICE CONTRACTS



Rating 1 = Undesirable, 10 = Very Desirable

SOURCE: INPUT Survey

EXHIBIT III-32

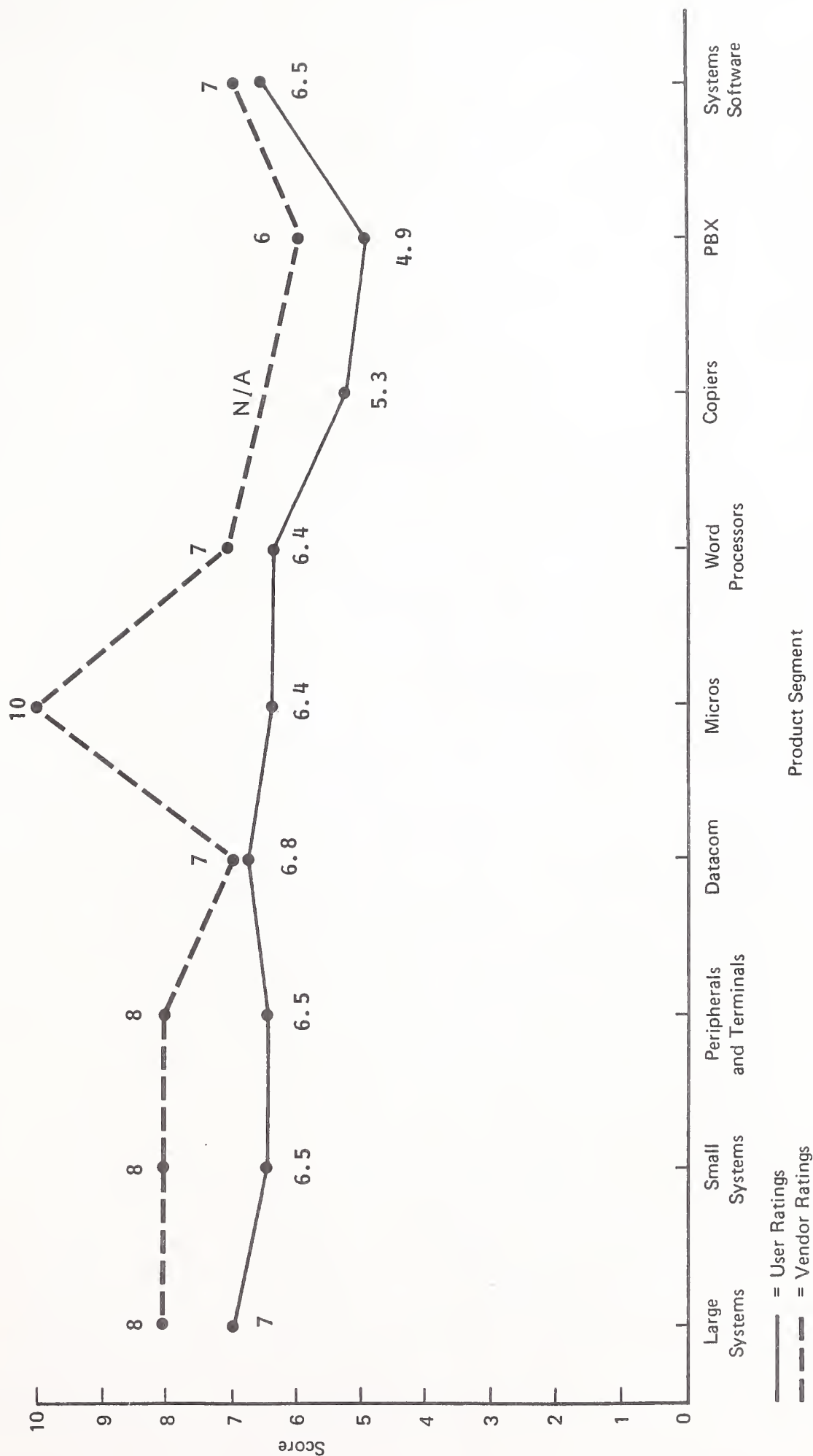
USER AND VENDOR ATTITUDES TOWARDS ANNUAL INVOICING



Rating 1 = Undesirable, 10 = Very Desirable

SOURCE: INPUT Survey

USER AND VENDOR ATTITUDES TOWARDS MORE FLEXIBILITY IN SERVICE CONTRACTS

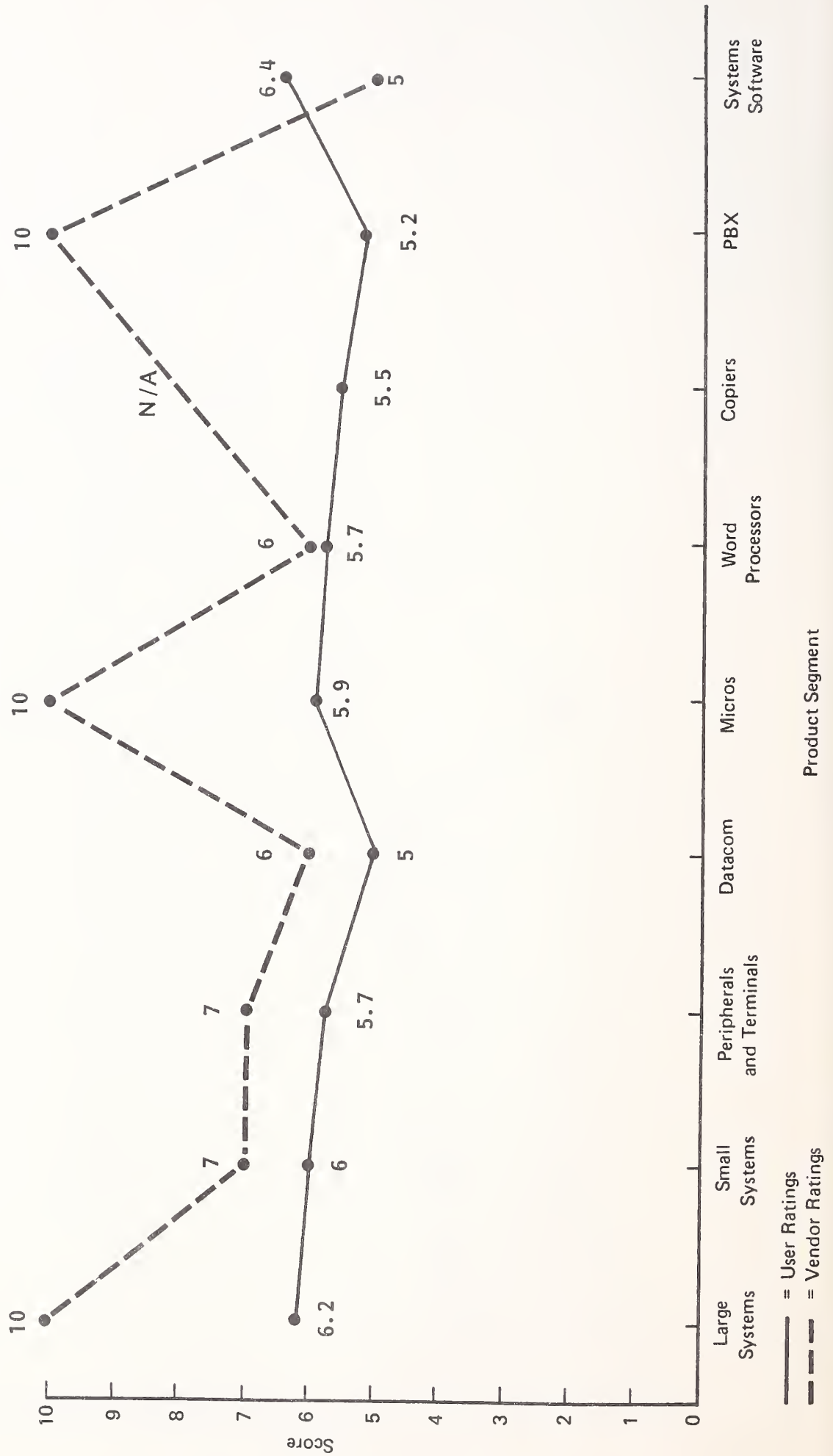


Rating 1 = Undesirable, 10 = Very Desirable

SOURCE: INPUT Survey

EXHIBIT III-34

USER AND VENDOR ATTITUDES TOWARDS BUNDLED OR UNBUNDLED SERVICE CONTRACTS



Rating 1 = Undesirable, 10 = Very Desirable

SOURCE: INPUT Survey

IV VENDOR ANALYSIS

IV VENDOR ANALYSIS

A. COMMENTARY

- The desire of field service organisations to continue strong revenue growth is being defeated by greater economic and competitive forces. Vendors are forecasting a dramatic 12% revenue shortfall in 1985.
 - This means that field service managers, by 1985, will be unable to replace lost revenues with income from replacement sales.
 - The ratio of service to hardware is expected to fall because buyers resist a ratio that exceeds seven to nine percent.
- Answers to the problem of decaying revenue, as previously noted in INPUT forecasts, are not easy to find. At least two major U.S. vendors have reacted by selling their service organisations to other independent service speculators.
- INPUT will keep a close watch on this problem during 1984 and will help develop as many remedies and solutions as possible.
- The revenue situation in 1985 will probably result from a wave of maintenance price discounts or reductions that will be precipitated by:

- Competition.
- Reduction in scope (e.g., customer-assisted maintenance).
- A number of major field service vendors are also concerned about the forthcoming "nothing to do" syndrome whereby large numbers of talented field engineers are idle because more and more maintenance-free equipment is being designed, manufactured, and installed.
- While this outlook for vendors is pessimistic, field service managers should be thinking ahead for ways to reduce costs and/or increase revenues.
 - Potential revenue increases, discussed later in this chapter, have the potential of adding 15% to the base via new or improved services, including:
 - More personalised service.
 - Guarantees for software turnaround time.
 - Software enhancements.
 - Software consulting.
 - Cost reduction is most clearly available through the reduction of repeat calls. Service vendors would like to see 13% repeat calls, a substantial savings over the current 19%.
 - A six percent saving in any service budget would be well received.
 - Remote diagnostics can help achieve budget reductions. Repeat calls for lack of the right part would be nearly eliminated.

- Field service has matured into a large business and the problems anticipated for the next few years are typical of business expansion in general. Survival is a serious endeavor - as most field service managers know.

B. QUALITY OF SERVICE

- The self-appraisal of vendors regarding service quality is summarised in Exhibit IV-1. Vendors in general, and for all systems represented in the survey, regard the quality of the service they provide as good. Lower scores, but still in the acceptable range, are noted for remote diagnostics, preventive maintenance, software support, quality of information and quality of marketing and salespeople.
- Vendors are more self-critical when ranking quality of service by market segments. Remarkably, self-evaluations are notably low for:
 - Software support capability: microcomputers.
 - Preventive maintenance effectiveness: systems and applications software; microcomputers.
 - Remote diagnostics: large systems; systems and application software.
- The low score of 4.6 for large-systems remote diagnostics is surprising. It means that while most large-systems maintenance vendors have some form of remote diagnosis, vendors are not satisfied that this technique is effective and useful in its present state.
 - More marketing of large-systems remote diagnosis is required.

EXHIBIT IV-1

QUALITY OF SERVICE PROVIDED BY VENDORS (Self-Appraisal)

QUALITY OF SERVICE	PRODUCT CLASSIFICATION									
	SYSTEMS					OFFICE PRODUCTS			SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computers	Word Processors	PBAX	Systems	Applications
Overall Quality of Service	7.3	8.0	8.0	8.0	7.4	5.8	7.0	6.5	6.5	6
Quality of Engineers	7.5	8.3	7.8	8.0	7.4	7.8	7.0	7.5	7.2	7
Quality of Service Management	7.5	7.8	7.8	7.9	7.5	6.4	7.2	6.0	7.3	7
Availability of Spare Parts	7.9	7.3	8.3	8.1	8.0	7.8	7.3	8.5	7.0	8
Software Support Capability	6.2	6.5	6.1	5.5	6.2	3.3	5.1	7.0	7.3	7
Preventive Maintenance Effectiveness	6.1	6.9	6.5	6.4	5.9	4.3	5.8	6.0	3.5	4
Remote Diagnostics	5.5	4.6	5.3	6.0	5.9	5.3	5.1	8.5	4.0	4
Quality of Information and Communication	6.7	6.8	7.1	7.2	6.6	5.2	6.8	6.5	6.5	6
Value of Service Compared to Price	7.6	8.3	7.9	7.5	7.7	6.2	7.3	7.5	7.1	7
Quality of Marketing and Salespeople	6.4	6.9	6.9	6.9	6.7	5.0	5.3	6.0	5.5	5
Product Reliability	7.6	7.8	7.9	7.5	7.8	6.6	6.5	9.0	7.6	7

Rating: 1 = Low, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

- Furthermore, as is shown later, vendors' success at implementing remote diagnostics and management's attention paid to remote diagnostics are merely average.

C. SERVICE ISSUES

- Maintenance vendors, as a whole, rate reliability and availability as most important, as shown in Exhibit IV-2. Of least significance, overall, are uptime guarantees, having the same engineer for each call, and preventive maintenance.
- For product segments, the most importantly regarded service issues are:
 - Availability and reliability for:
 - PBAX.
 - Systems and applications software.
 - Having a service choice for small systems (owing to the large menu of services and products with relatively few contract options).
- Least regarded subjects, by product category include:
 - Preventive maintenance for microcomputers.
 - Uptime guarantees for microcomputers.

EXHIBIT IV-2

IMPORTANCE OF SERVICE ISSUES

(Vendor Self-Appraisal)

SERVICE ISSUES	PRODUCT CLASSIFICATION											
	SYSTEMS					OFFICE PRODUCTS					SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computers	Word Processors	PBAX	Systems	Applications		
Systems Availability	8.6	9.6	8.7	8.1	8.3	6.8	8.0	10.0	9.8	10.0		
Response Time	8.2	8.8	8.5	7.8	8.6	6.4	7.5	9.5	8.8	9.0		
Repair Time	7.8	8.5	8.0	7.7	8.2	5.6	7.1	8.0	7.8	9.0		
Equipment Reliability	8.9	9.0	8.9	8.6	8.9	8.8	8.3	9.5	9.3	10.0		
Software Maintenance	7.7	7.6	7.6	7.2	7.7	6.8	7.6	8.0	9.2	9.0		
Price of Maintenance	7.6	6.9	7.8	7.9	7.3	8.0	7.9	8.5	6.8	8.0		
Preventive Maintenance	5.8	7.2	5.8	6.0	5.3	3.4	6.0	6.0	5.8	6.0		
Having Same Engineer Each Call	5.4	6.5	5.0	5.1	5.5	4.0	5.0	4.5	6.8	5.0		
Remote Diagnostics	6.7	5.9	6.1	5.8	6.9	7.2	6.4	9.0	8.4	8.0		
Uptime Guarantees	5.8	6.1	5.5	4.9	5.8	2.3	5.0	8.5	8.8	8.0		
Having a Choice of Service	6.8	6.9	9.8	5.9	5.7	6.8	5.6	4.5	5.3	8.0		

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

D. AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

- Vendors have a reasonably high perception of system availability, as shown in Exhibit IV-3.
 - Software, datacommunications products, PBAX, and microcomputers are seen by vendors as having high uptimes.
 - Small systems are least available.
 - Vendors think they should improve uptimes for:
 - Large systems.
 - Microcomputers.
 - Systems software.
 - Applications software.
- Exhibit IV-3 also shows response times provided by European service vendors, the ideal target, and the estimated user limit of wait time. The advent of remote diagnostics, technical assistance, and repair centres has changed the perception of response time in that site visits and repairs are not always required.
- It is interesting that PBAX service vendors feel compelled to provide "0" response time and that they also feel that two hours is the maximum acceptable to their customers. Other systems have more relaxed requirements.
- Applications software shows a maximum response time of 24 hours, which reflects less direct control and responsibility from maintenance vendors.

EXHIBIT IV-3

SYSTEM AVAILABILITY, RESPONSE TIME, AND REPAIR TIME (Vendor Self-Appraisal)

FEATURE	PRODUCT CLASSIFICATION									
	SYSTEMS					OFFICE PRODUCTS			SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computers	Word Processors	PBAX	Systems	Applications
SYSTEM AVAILABILITY (Percent)										
Currently Providing	96.5%	96.8	94.8	97.3	97.6	98.0	-	99.5	97.6	97%
Ideal	96.0%	98.8	94.0	95.4	94.2	98.5	-	99.4	98.5	99%
Minimum Your Users Would Accept	94.2%	95.9	94.2	91.3	96.3	94.0	-	99.4	96.0	95%
RESPONSE TIME (In hours from 1st call)										
Currently Providing	7.6	3.5	5.5	9.2	7.8	9.0	-	2.0	9.8	35
Ideal	6.9	2.4	6.0	8.7	7.0	7.0	-	0.0	8.1	24
Longest User Can Wait	12.1	6.1	10.6	14.3	15.2	21.5	-	2.0	11.3	24
REPAIR TIME (In hours from arrival)										
Current Repair Time	2.7	2.2	1.7	1.8	1.5	1.4	-	1.2	0.0	72
Ideal	2.4	1.1	1.4	1.2	1.4	1.0	-	1.0	0.0	72
Maximum Time User Would Accept	6.3	3.0	3.4	9.1	3.0	3.0	-	4.3	0.0	100

SOURCE: INPUT Survey

Vendors mostly assist users in analysing application problems and identifying the appropriate software vendor.

- Other than PBAX and applications software, vendors are providing better responses than the minimum they think customers will tolerate.
- As is the case for response time, repair time perceptions (Exhibit IV-3) are less accurate because of newer off-site maintenance techniques (including remote diagnostics and repair centres). Another technique clouding repair times is the exchange, whereby a good unit is provided in place of a bad one. This exchange can take place faster than the time it takes to fix the bad unit.
 - Repair times are very reasonable for most products.
 - Fixes for applications software problems appear to be unusually lengthy. However, the data in Exhibit IV-3 reflects only a small number of actual maintenance vendor repairs, because software houses do most repairs of this kind.

E. WILLINGNESS TO PROVIDE DIFFERENT CONTRACTS

- Exhibit IV-4 shows that service vendors are quite eager to provide different types of maintenance contract options. Especially attractive is the automatic renewal alternative, which helps lock in maintenance revenue in advance and saves repetitive administrative efforts.
- Also, annual invoicing and long-term contracts reduce service vendors' administrative time and can also ensure a continuous revenue stream.
 - Annual invoicing is more popular and appropriate to smaller equipment and occurs prior to service actually being provided.

EXHIBIT IV-4

VENDOR WILLINGNESS TO PROVIDE DIFFERENT CONTRACTS

TYPE OF CONTRACT	PRODUCT CLASSIFICATION												
	SYSTEMS					OFFICE PRODUCTS						SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computers	Word Processors	PBAX	Systems	Applications			
Long-Term Contract	8.3	9	9	8	9	8	8	10	7	6			
Automatic Renewal	9.8	10	10	10	10	10	10	10	10	10			
Annual Invoicing	9.2	9	9	9	9	10	9	10	9	10			
More Flexibility	7.3	8	8	8	7	10	7	6	7	4			
Bundling*	7.2	10	7	7	6	10	6	10	5	8			

Rating: 1 = Unwilling, 10 = Willing

* 1 = Bundled, 10 = Unbundled

SOURCE: INPUT Survey

- This concept can be sold for other types of equipment, but maintenance vendors must be prepared to discount at a rate equivalent to current interest rates. This is because maintenance vendors have the use of the funds a year in advance.
- Long-term contracts also can be sold and are attractive to users in that they freeze service prices for future years.
- Vendors think they are willing to provide more flexible contracts but are pretty strongly in favor of unbundled service contracts.

F. REPEAT CALLS

- Repeat calls are a necessary evil for service organisations because it is impossible for engineers to always carry the right spare part with them on each visit. The greater number of repeat calls for large systems reflects large systems' more complex and numerous subsystems components. Data on repeat calls is shown in Exhibit IV-5.
- There is a large gap between the ideal incidence of repeat calls and practical experience. This reflects vendors' concerns with costs - repeat calls being a very expensive cost factor as well as a major factor in customer dissatisfaction.
- Remote diagnostics and construction of newer more maintainable equipment will help reduce the repeat call factor in the future. Remote diagnostics will help focus on the nature of the fault and thereby help to identify the right part before the engineer leaves for the site.

EXHIBIT IV-5

NUMBER OF REPEAT CALLS
(Percent of Total Calls)

SITUATION	PRODUCT CLASSIFICATION									
	SYSTEMS					OFFICE PRODUCTS			SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processors	PBAX	Systems	Applications
Current	16%	25%	11%	11%	16%	15%	18%	20%	18%	50%
Ideal	1	1	1	1	2	5	1	3	1	0

SOURCE: INPUT Survey

G. NO FAULTS FOUND

- Another source of inefficiency and excessive service costs is incidents where no fault is identified after the service engineer has been committed to the problem. Exhibit IV-6 shows, again, a large gap between actual experience and the ideal.
- The most common reason for no fault being found is customer or operator error. Other reasons:
 - Problems finally diagnosed as some other equipment vendor's problem.
 - Intermittent failures.

H. DISCOUNTS FOR USER ASSISTANCE IN SERVICING

- There is an increasing trend towards user-assisted service, sometimes called participatory service, whereby the user performs some aspect of maintenance. This helps:
 - Vendors reduce costs (they do not have to make a site visit, etc.).
 - Users increase their machine uptime by reducing the vendor's response time.
- Obviously, in return for this, vendors must be willing to offer some consideration. A summary of discounts for appropriate user assistance is found in Exhibit IV-7. Percentage discounts are shown (percent of basic contracted maintenance coverage).

EXHIBIT IV-6

NUMBER OF "NO FAULTS" FOUND (Percent of Total Calls)

SITUATION	PRODUCT CLASSIFICATION								
	SYSTEMS				OFFICE PRODUCTS			SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processors	PBAX	Systems Applications
Current	19%	18%	17%	22%	15%	20%	14%	1%	31%
Ideal	13	3	9	15	11	5	8	0	37
									48%
									100

SOURCE: INPUT Survey

EXHIBIT IV-7

DISCOUNTS VENDORS WOULD OFFER IF USERS HELPED SERVICE (Percent of Basic Contract)

TYPE OF ASSISTANCE	PRODUCT CLASSIFICATION									
	SYSTEMS					OFFICE PRODUCTS			SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processors	PBAX	Systems	Applications
Helping to Diagnose	4%	7%	3%	4%	3%	5%	4%	3%	5%	5%
Helping Replace Boards	8	8	5	14	6	5	12	13	0	0
Helping to Patch Software	4	2	4	1	3	0	5	3	10	10
Delivering Portable Machines to Repair Centres	22	19	23	26	17	36	25	0	0	0

SOURCE: INPUT Survey

- A range of discounts for customers bringing the faulty equipment to the vendor's repair centre (or sending it there or having it sent there) is a very attractive idea in terms of vendor's cost reduction. Vendors feel this assistance is worth between 17% and 36% of the list price for contracted maintenance coverage, depending on the type of equipment.
- Walk-in (mail-in) depots are, potentially, a most lucrative concept for vendors to exploit.
- As users get more and more sensitive about service expenses, they will be more receptive to the idea of user assistance.
- Marketing is the key to further success.

I. ESTIMATED PREMIUMS FOR EXTRA/IMPROVED SERVICES

- Other INPUT research has suggested ways for vendors to enhance service revenues. These methods are enumerated in Exhibit IV-8. For each method, a valuation by vendors is given.
- Potentially, the most promising candidates for revenue enhancement are:
 - Personalised service for:
 - Large systems.
 - Software applications and systems.
 - Guaranteed turnaround time for software.
 - Guaranteed uptime for PBAX.

EXHIBIT IV-8

ESTIMATED PREMIUMS FOR EXTRA/IMPROVED SERVICE (As Indicated by Vendors)

TYPE OF SERVICE	PRODUCT CLASSIFICATION											
	SYSTEMS						OFFICE PRODUCTS				SOFTWARE	
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processors	PBAX	Systems	Applications		
Guaranteed Uptime	3.8	4	4	3	4	4	4	5	0	0		
Guaranteed Response Time	3.0	3	3	3	3	3	3	5	0	0		
Guaranteed Turnaround Time on Software	2.8	2	3	3	2	1	0	0	5	5		
Software Consulting From Servicer	2.7	2	3	2	3	1	5	5	3	3		
Software Enhancements From Servicer	3.1	3	3	3	2	1	5	5	4	4		
Personalised Service	3.7	5	4	4	3	2	5	5	5	5		

Rating: 1 = None, 2 = Up to 1% Basic Charge, 3 = Up to 5%, 4 = 10%, 5 = 15%

SOURCE: INPUT Survey

- Guaranteed response time for PBAX.
- Software consulting for:
 - . Word processors.
 - . PBAX.
- Software enhancements for:
 - . Word processors.
 - . PBAX.
- Each of these enhancements is worth a 15% maintenance price premium, according to vendors' estimates.
- In the view of vendors, least valuable in terms of revenue enhancement are the following:
 - Guaranteed turnaround time, software consulting, and enhancements for microcomputers.
 - The ratings for large systems in the important areas of guaranteed software turnaround time and software consulting are deceptive because the basic charge for calculating large-system premiums is much larger than for the other products.

J. PRICING

- Pricing for field service was treated in detail in INPUT's 1983 issue report Field Service Pricing in Europe. Exhibit IV-9 shows a generally conservative approach towards pricing; this conservatism reflects economic factors and inflationary controls.
- Estimated factors for cost of maintenance as a percent of hardware are also shown and present an interesting puzzle for vendors in the future.
 - As hardware prices drop in general, due to more competition and better technology, theoretically the price of maintenance, even if frozen at existing levels, should cause the ratio of service cost to hardware cost to rise.
 - The interesting conclusion by major vendors is that the ratio, right now an average of nine percent for all types of equipment, is going to drop. The only rational way this could happen is, ultimately, to have price reductions for service.

K. 1982 SUCCESSFUL SERVICE PROJECTS

- Exhibit IV-10 provides an appraisal of how vendors view their success at implementing key maintenance projects throughout the year. Most successful were:
 - Living within budget limitations.
 - Recruiting engineers.

EXHIBIT IV-9

PRICING

(As Indicated by Vendors)

PRICING	PRODUCT CLASSIFICATION									
	SYSTEMS					OFFICE PRODUCTS				
	All Systems	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processors	PBAX	Systems	Applications
Percent Increase Last Year	-	4%	5%	6%	4%	4%	3%	-	6%	8%
Percent Increase Expected This Year	5%	4	5	5	6	3	5	-	5	N/A
Percent Unacceptable to User	5	8	9	9	9	7	7	-	11	12
Percent Current Annual Maintenance to Hardware Price	9	9	10	11	10	14	12	-	11	11

SOURCE: INPUT Survey

EXHIBIT IV-10

FIELD SERVICE PROJECT IMPLEMENTATION (Vendors Rate Themselves)

	RATING
Recruiting of Field Service Engineers	8
Training of Field Service Engineers	7
Reducing Labor Turnover	8
Improving Product Quality	7
Quality of Service	8
Providing Remote Diagnostic Program	5
Meeting Customer Demands	8
Developing New Revenues	7
Living with Budget Limitations	9
Providing Competitive Salary/ Compensation	8
Reducing Spare Parts Shortages	7
Marketing Field Service	7
Improving Service Image (Promoting Professionalism)	7

Rating: 1 = Low Success, 10 = High Success

- Reducing labor turnover.
- Providing quality service.
- Meeting customer demands.
- Providing competitive salary and compensation.
- Least successful, but still at an average rate of success, was the program to provide remote diagnostics.
- Vendors report that good progress has been achieved in:
 - Developing new revenues.
 - Marketing field service.
 - Improving the image of field service.
 - Training field service engineers.
 - Improving product quality.
 - Reducing spare parts shortages.
- Especially important to the survival of a field service organisation is the development of new revenue and the marketing of field service. These subjects represent major areas of interest by INPUT's clients and will be the subjects of 1984 research in the European field service program.
- Heightened interest in many of the field service projects is noticed. Ratings for all projects are generally higher than they were in 1982 (1982 Annual Report - Field Services in Europe).

L. INFLUENCE AND INVOLVEMENT IN ISSUES

- The improvement, over the last three years, of field service's influence and its increased involvement in important service-related issues is evident in Exhibit IV-II. (In Exhibit IV-I, issues that are controlled by design and engineering departments include equipment specification, equipment design, and built-in diagnostics. These important areas, while showing steadily more involvement by and influence from field service, should nevertheless be influenced even more strongly by field service's input.)
 - The field service organisation has valuable field data that the engineering and design groups should be interested in.
 - More successful vendors will induce field service to become more involved by breaking down the vendors' in-house political barriers. But field service should also be more persuasive in removing these barriers.
- Marketing and sales-related issues include geographic market control (limiting equipment installations in remote, unprofitable areas), order acceptance sign-off (allowing service to have a voice in signing off the order acceptance for terms configuration, etc.), the reduction of sales "giveaways," contract terms and conditions, site acceptability, user education, and the pricing and selling of service.
 - All of these show noticeable improvements that reflect the changing nature of the business (more acceptability of service) and the continued hard work by service personnel.
 - More effort, nevertheless, is required. Companies are constantly seeking better ways to combine service and product quality.

EXHIBIT IV-11

FIELD SERVICE INFLUENCE AND INVOLVEMENT (Vendor Self-Appraisal)

	1982	1983
Equipment Specification	4	5
Equipment Design	3	4
Built-in Diagnostics	5	6
Spares Requirements and Levels	7	8
Geographic Marketing Control	4	5
Order Acceptance Sign-off	5	6
Contractual Terms and Conditions	5	9
Acceptability of Site Environment	6	7
User Education	6	6
Selling of Field Service	6	7
Pricing of Field Service	7	8

Rating: 1 = Low, 10 = High

SOURCE: INPUT Survey

M. MANAGEMENT ISSUES

- Service management's attention to improving its own influence is above average, as Exhibit IV-12 reveals. However, there are other very important areas competing for the service managers' time.
- Major work is being done in:
 - Response time.
 - Price of maintenance.
 - Quality of service.
 - Improving service image.
- The least amount of involvement by service managers is in these areas:
 - Repair depots (not applicable to all vendors).
 - User self-maintenance (not "assistance," but rather users usurping the maintenance function from the service organisation).

N. MAINTENANCE REVENUES

- Maintenance revenue in Europe is expected to increase by 17% in 1984, followed by a drastic decline in 1985, according to vendors' opinions represented in Exhibit IV-13.

EXHIBIT IV-12

SERVICE MANAGEMENT ATTENTION (Vendor Self-Appraisal)

AREA	RATING
System Availability	7
Response Time	8
Repair Time	7
Preventive Maintenance	5
Remote Diagnostics	5
Price of Maintenance	8
Stability of Engineer Population	7
Uptime Guarantees	5
Equipment Reliability	7
Support Centers	6
Software Maintenance	8
Flexible Contracts	6
User Self-maintenance	3
Union Avoidance	0
Other Repair Depots (Including Mail-in)	4
Other	2
Development of New Revenue	6
Quality of Service	8
Improving Service Image	8
Improving Influence of Field Service	7

Rating: 1 = Low, 10 = High

SOURCE: INPUT Survey

EXHIBIT IV-13

VENDOR MAINTENANCE REVENUES (Average) (\$ thousands)

	HARDWARE	SOFTWARE	TOTAL
1983	\$23,305	\$2,579	\$24,025
1984	27,527	2,716	28,583
1985	24,800	1,929	25,572
1984 Divided by 1983 Equals:	1.18	1.05	1.17
1985 Divided by 1984 Equals:	0.90	0.71	0.88

SOURCE: INPUT Survey

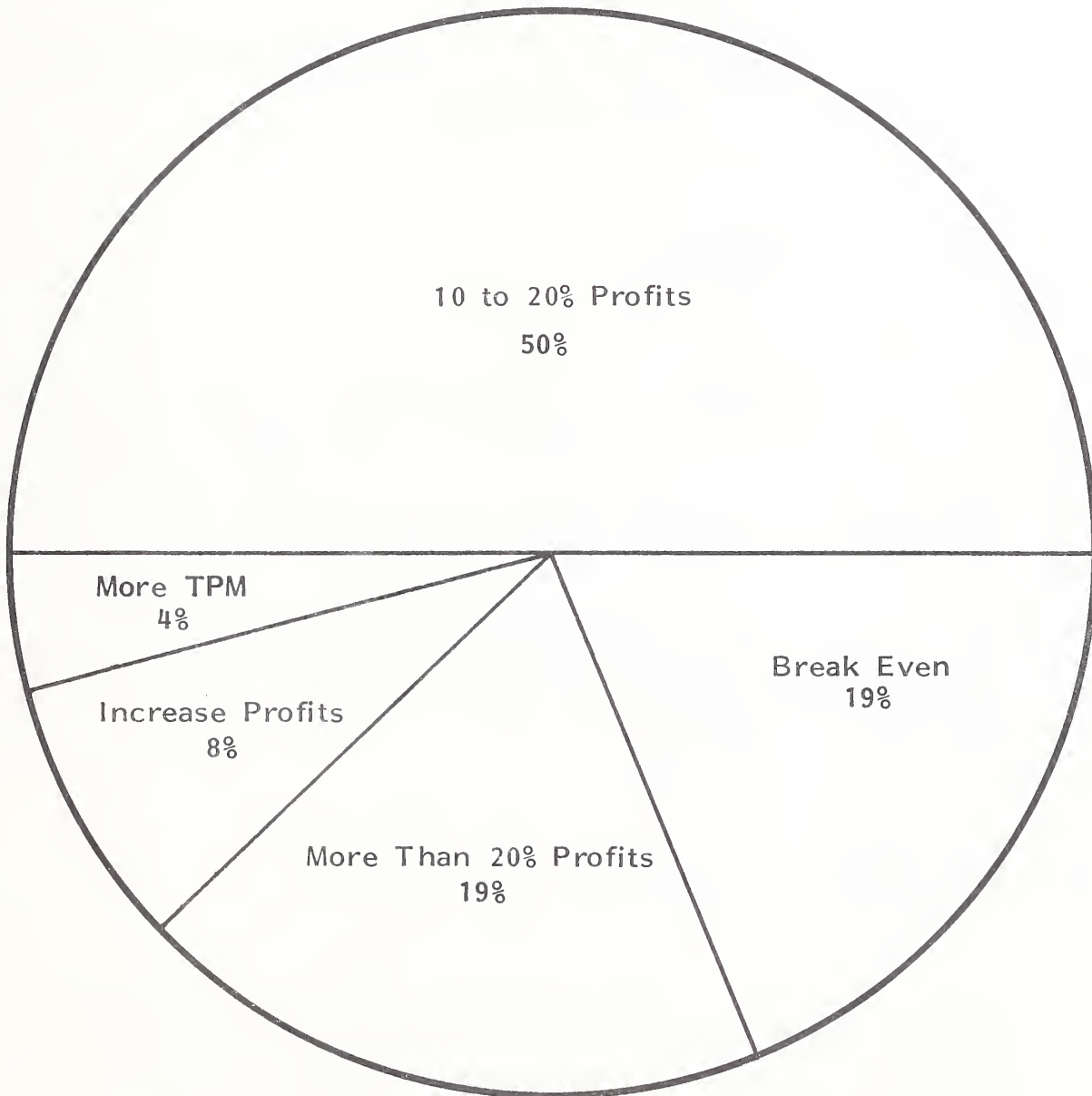
- Vendors do not foresee anything but a modest increase in software maintenance revenue for 1984; hardware service revenues are expected to increase 18%.
- Software opportunities are not yet recognised by service firms as potentially big revenue enhancement sources.
- Growth in hardware maintenance revenues is attributed to the expected increase in hardware product sales as the 1984 economy heats up.
- The dramatic drop in expected 1985 service revenue is a result of vendors heeding current signals of maintenance price erosion. This erosion is due to increased competition and more reliable products. Answers are not clear as to how service revenues can be protected in 1985 from previously discussed forces.
- During 1984 INPUT will be especially sensitive to this gloomy forecast and will concentrate on finding ways to manage and retain revenues.

O. PROFIT OBJECTIVE

- Profitability in field service was treated in a recent 1983 issue report by INPUT, Ltd., Field Service Profitability. Exhibit IV-14 shows a brief summary analysis of how vendors view their profit objectives. It should be remembered that these represent objectives and not actual experience.
- Half of the respondent vendors have a service profit objective of between 10% and 20%.
- Nineteen percent would like their service profits to exceed 20%.

EXHIBIT IV-14

VENDORS' PERCEPTION OF PROFIT OBJECTIVE
(Percent Mentions)



SOURCE: INPUT Survey

- Nineteen percent are not profitability oriented, remaining as a break-even operation.
- Eight percent stated their goal is simply to increase profits.
- The remaining four percent think profitability is associated with increased third-party maintenance.

P. REMOTE DIAGNOSTICS

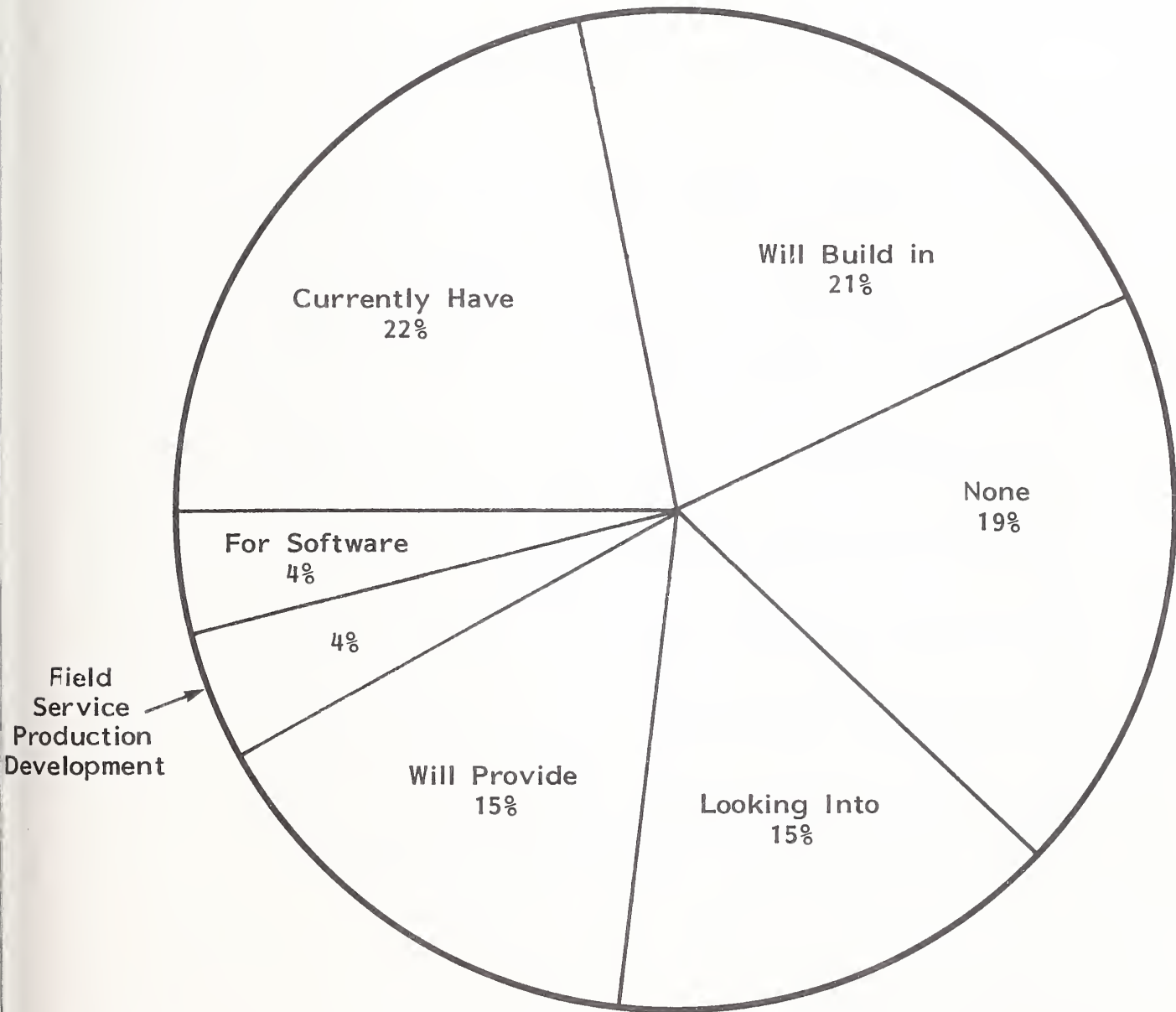
- Service vendors' strategies for providing remote diagnostics are summarised in Exhibit IV-15. While nearly 25% currently have remote diagnostics, 36% are committed to implementing remote diagnostics in the future either by building them into their programs and products or otherwise providing for them.
- The remaining vendors are less enthusiastic, which is not unusual in that this technique isn't readily useful to certain information systems vendors, certain peripherals, copiers, etc.

Q. EMPLOYEES

- Exhibit IV-16 shows the average size of service organisations to be 347 persons in 1983 and predicts a 9% growth for 1984.

EXHIBIT IV-15

VENDORS' STRATEGY FOR REMOTE DIAGNOSTICS
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT IV-16

EMPLOYEES IN SERVICE COMPANIES (Average)

NUMBER OF :	AVERAGE 1983	1984
Employees in Field Service	347	377
Field Engineers	192	213
Technical Support Engineers	20	27
Field Service Administrators	92	94
Field Service Supervisors	30	31
Field Service Line Managers	13	12

- Analysis of expected structural changes indicate little or no increase in:
 - Administration.
 - Supervision.
 - Management.
 - Only the number of field engineers and technical support engineers are expected to increase in 1984.

V USER ANALYSIS - EUROPE, ALL SYSTEMS

V USER ANALYSIS - EUROPE, ALL SYSTEMS

A. COMMENTARY

- The following analysis, for Europe, is based on data from Scandinavia, Benelux, Italy, West Germany, France, and the United Kingdom. The data can be found in Appendices A-F.
- As shown in Exhibit V-1, one of the most significant findings in this research is the fact European users are anticipating cuts in their maintenance budgets of 9% for 1984. This surprising situation results from:
 - Users' uncertainty about maintenance costs.
 - Anticipation of more reliable and less costly new hardware and software products.
 - More competition, which will drive prices down.
- The reduction of maintenance budgets, while inconsistent with an anticipated maintenance price increase of 7% for 1984, must be viewed as a serious restriction of the European service business. Details are shown in Exhibit V-2.
- European users are generally satisfied with service and are reluctant to consider new ideas in service such as different contracts, participatory main-

EXHIBIT V-1

USER MAINTENANCE BUDGETS (AVERAGE) IN EUROPE (\$ thousands)

	HARDWARE	SOFTWARE	TOTAL
1983	\$10.3	\$2.6	\$12.9
1984	9.2	2.6	11.8
1985	7.7	2.5	10.2
1984/1983	0.89	1.0	0.91
1985/1984	0.84	0.96	0.86

SOURCE: INPUT Survey

EXHIBIT V-2

USERS' VIEW OF MAINTENANCE PRICING -
ALL SYSTEMS IN EUROPE

1982 PRICE INCREASE	
Currently Get	7.6%
Expect in 1983	7.0
TOP 1983	10.1

SOURCE: INPUT Survey

tenance, and improved service at an increased price. This attitude prevails in spite of possible cost and performance benefits.

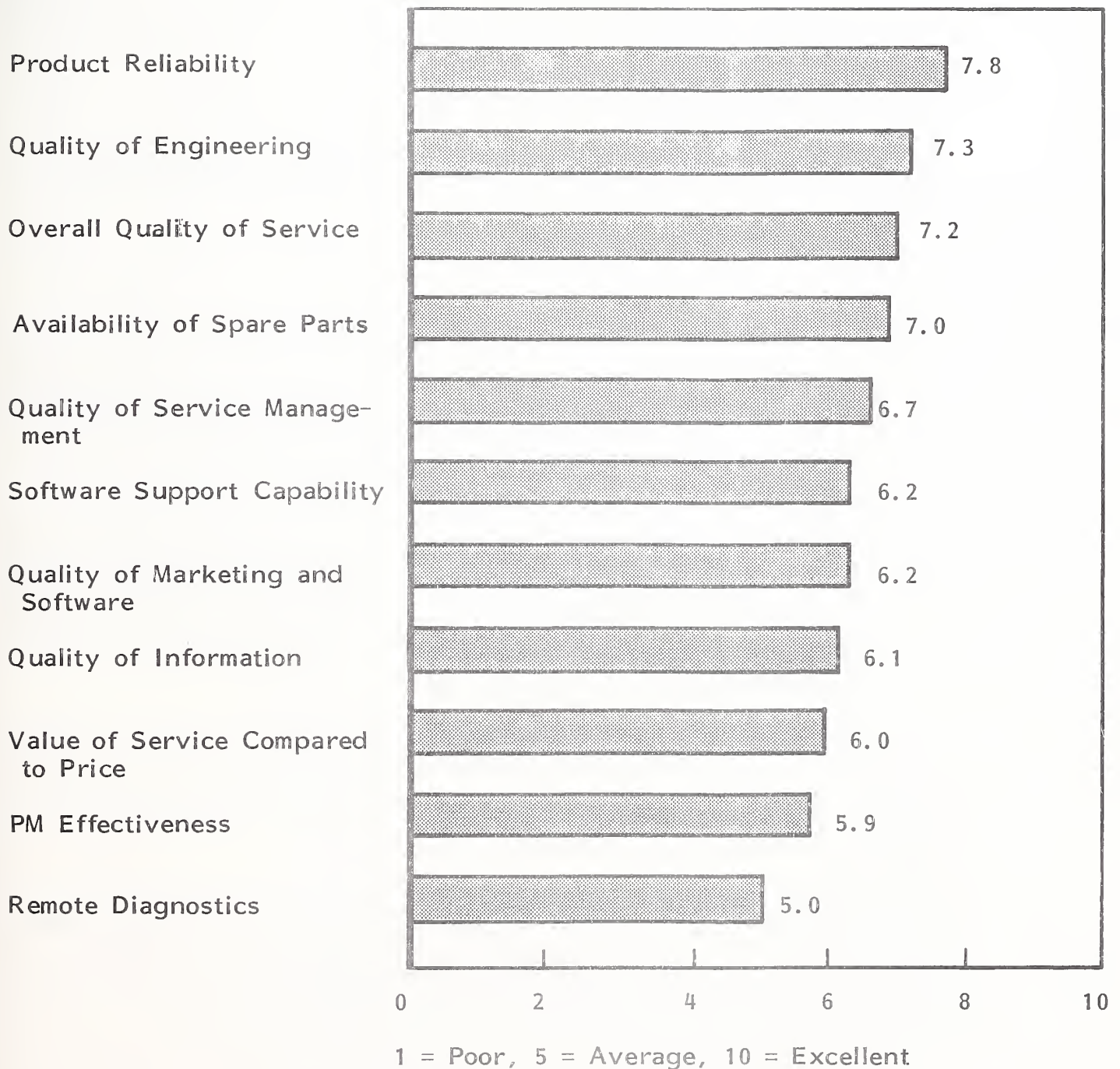
- The simple conclusion from both major points is that field service in Europe, now more than ever, has to be marketed to its users. A separate product in its own right, service has been viewed passively by users for a long time but they now spend over \$5 million a year. Vendors need to pay attention in a professional marketing sense to this large market. Marketing and the demonstration of cost and performance benefits are the keys to inducing a better outlook for the European service industry.

B. QUALITY OF SERVICE

- European information systems users, on the whole, are satisfied with service. Exhibit V-3 shows that they now have below-average rankings and that overall quality ranks third out of 11 quality attributes with an average score of 7.2 (good).
- It is significant that overall quality is ranked as high as it is, and that overall quality is ranked just below quality of engineers and just above availability of spare parts. The conclusion is that good quality and good availability of spare parts will yield good quality of service.
- Lower ratings are registered for remote diagnostics, preventive maintenance effectiveness, and value of service compared to price.
 - Remote diagnostics aren't important to users because service vendors haven't marketed the concept well enough. That is, they haven't done a very good job of telling users what the benefits to the user are.

EXHIBIT V-3

USERS' QUALITY OF SERVICE RATING
FOR ALL SYSTEMS IN EUROPE



SOURCE: INPUT Survey

- There is a continuing controversy about preventive maintenance. The low score represents a complacent attitude from vendors. Preventive maintenance is becoming obsolescent because newer equipment doesn't require it.
- Value of service compared to price receives a low rating and this is significant since it reflects a meaningful objection to service prices in general. As TPM resources multiply, this objection is a potential problem to major service vendors.

C. RESPONSE AND REPAIR TIME, SYSTEM AVAILABILITY, AND SERVICE ISSUES

- Exhibit V-4 shows the European average scores for response and repair times for all systems. The average response time of 6.2 hours is inadequate for critical systems and is significantly longer than the ideal target of 2.8 hours. Nevertheless 6.2 is well below the maximum acceptable time of 8.7 hours.
- The average repair time of four hours for all systems is excessive, but this reflects repair shop activity and is outside the threshold of pain figure of 6.6 hours. Perceived repair time is still considerably off the ideal of 2.3 hours.
- The availability for all systems in Europe averages 93.4%, as shown in Exhibit V-5. This is below the ideal of 96.9%, but comfortably beyond the threshold of pain, 87.6%.
- The importance of service issues for all systems in Europe as perceived by users is shown in Exhibit V-6. Reliability is rated most important; remote diagnostics and preventive maintenance are similarly important.

EXHIBIT V-4

USERS' VIEW OF RESPONSE AND REPAIR TIMES - EUROPE (All Systems) (Hours from First Call)

	RESPONSE TIME	REPAIR TIME
Currently Get	6.2	4.0
Ideal	2.8	2.3
Maximum Acceptable	8.7	6.6

SOURCE: INPUT Survey

EXHIBIT V-5

USERS' VIEW OF SYSTEM AVAILABILITY - EUROPE
(All Systems)

Currently Get	93.4%
Ideal	96.9
Minimum Acceptable	87.6

SOURCE: INPUT Survey

EXHIBIT V-6

USERS' RATING OF IMPORTANCE OF SERVICE ISSUES IN EUROPE (All Systems)

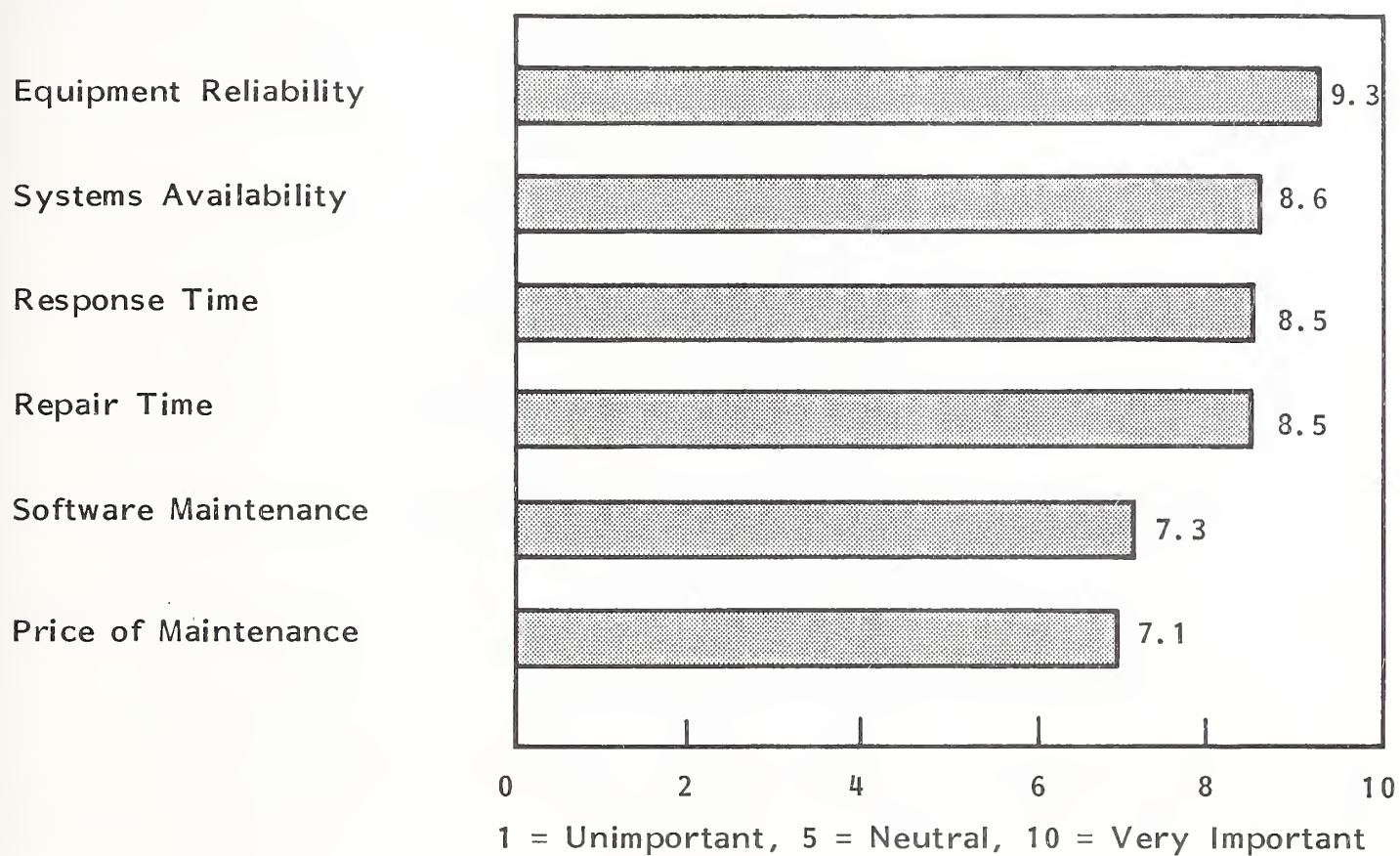
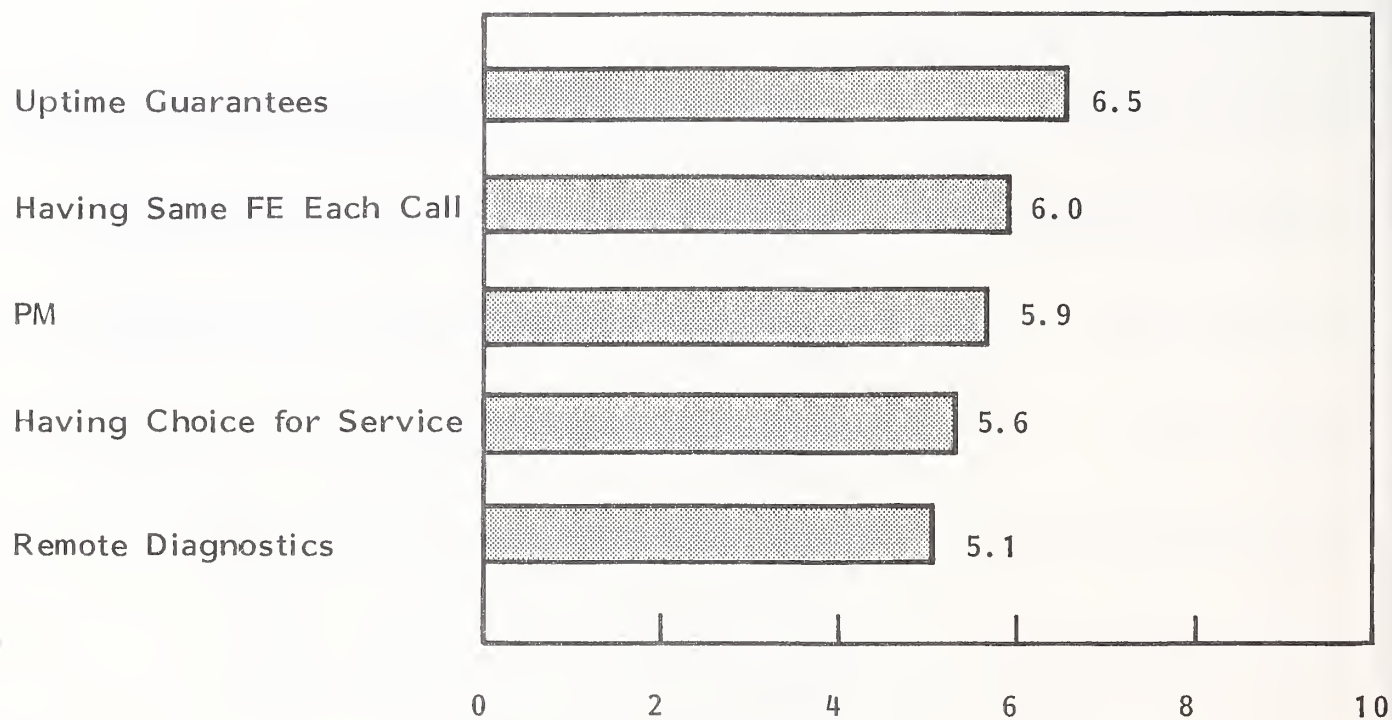


EXHIBIT V-6 (Cont.)

USERS' RATING OF IMPORTANCE OF SERVICE ISSUES IN EUROPE
(All Systems)



Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

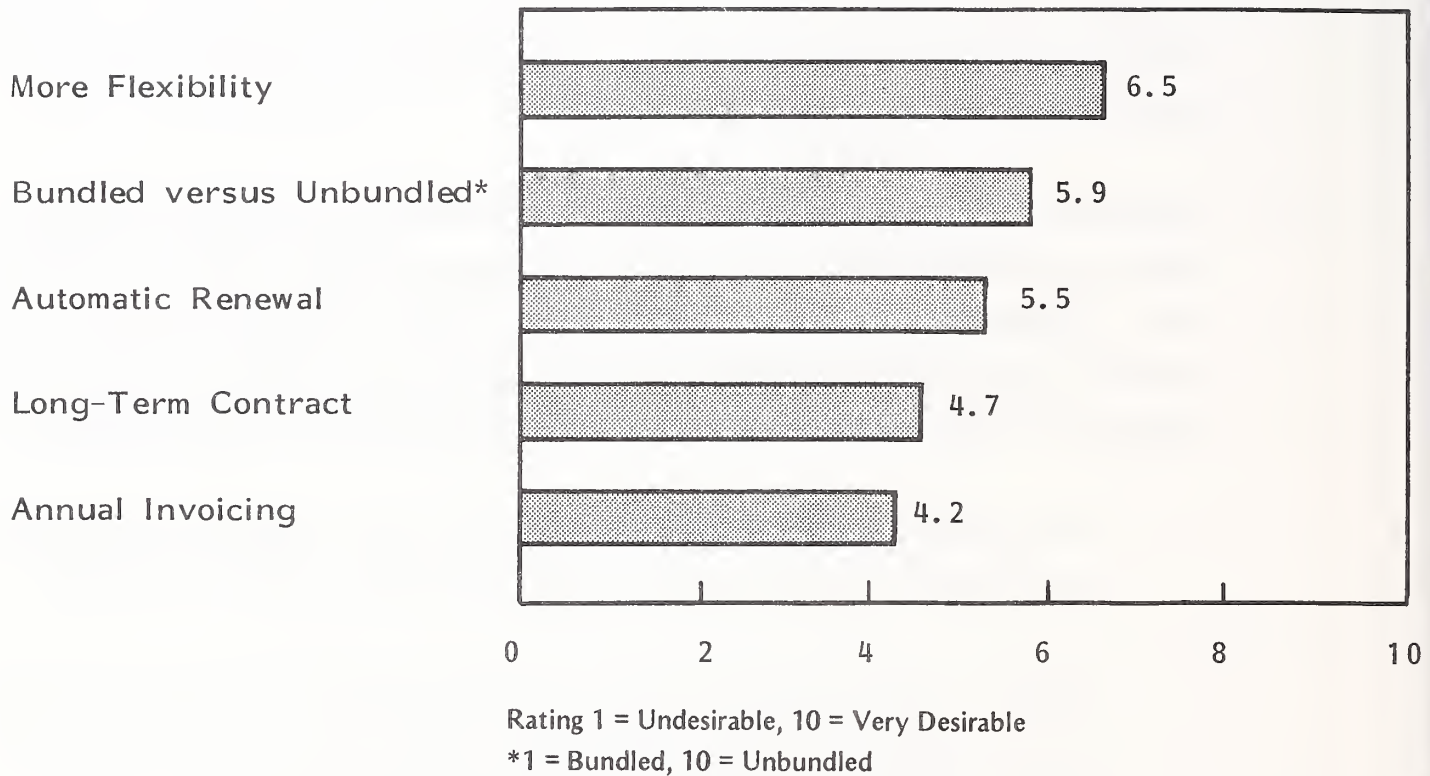
SOURCE: INPUT Survey

D. DESIRE FOR DIFFERENT CONTRACTS, WILLINGNESS TO AID SERVICER,
AND WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

- As can be seen in Exhibit V-7, European users of all types of systems, including computers, peripherals and terminals, copiers, PBAXs and other office products, are not looking for different ways to contract for maintenance service. Only moderate interest is shown for automatic renewal, bundled contracts, and contracts with more flexibility; long-term contracts and annual invoicing are even less wanted.
- Similarly, there does not appear to be much interest on the part of European users to assist the services vendor in maintenance chores, as seen in Exhibit V-8. Diagnostic assistance, which the user cannot escape, since he must somehow convey the manifestation of the problem to the servicer, is the most appealing. Delivering portable equipment to repair centres is least appealing.
 - The reluctance on the part of users to assist in servicing is derived from the habit of always having someone else do most of the service.
 - Service vendors can alter this user attitude through effective marketing and by demonstrating assistance's tangible value to the customer in terms of cost reduction and improved system performance.
- Exhibit V-9 indicates that information systems users in Europe are not especially excited about paying increased prices for service, even if new or improved services are offered. Conclusions are:
 - Users feel that the price of maintenance is currently too high.
 - Not enough marketing promotion and cost benefit analysis has been conveyed to customers (as is the case with newer contracts and service assistance).

EXHIBIT V-7

USERS' DESIRE FOR DIFFERENT CONTRACTS IN EUROPE (All Systems)



SOURCE: INPUT Survey

EXHIBIT V-8

USERS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT (All Systems-Europe)

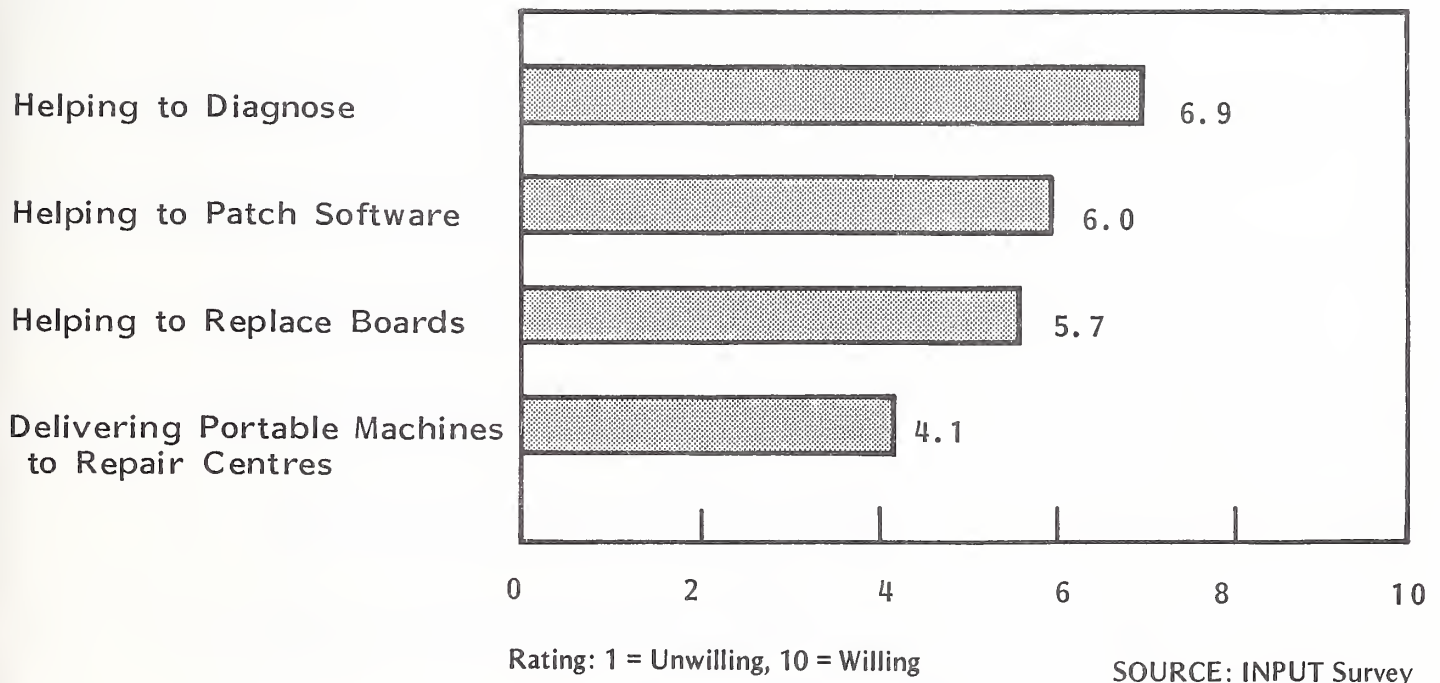
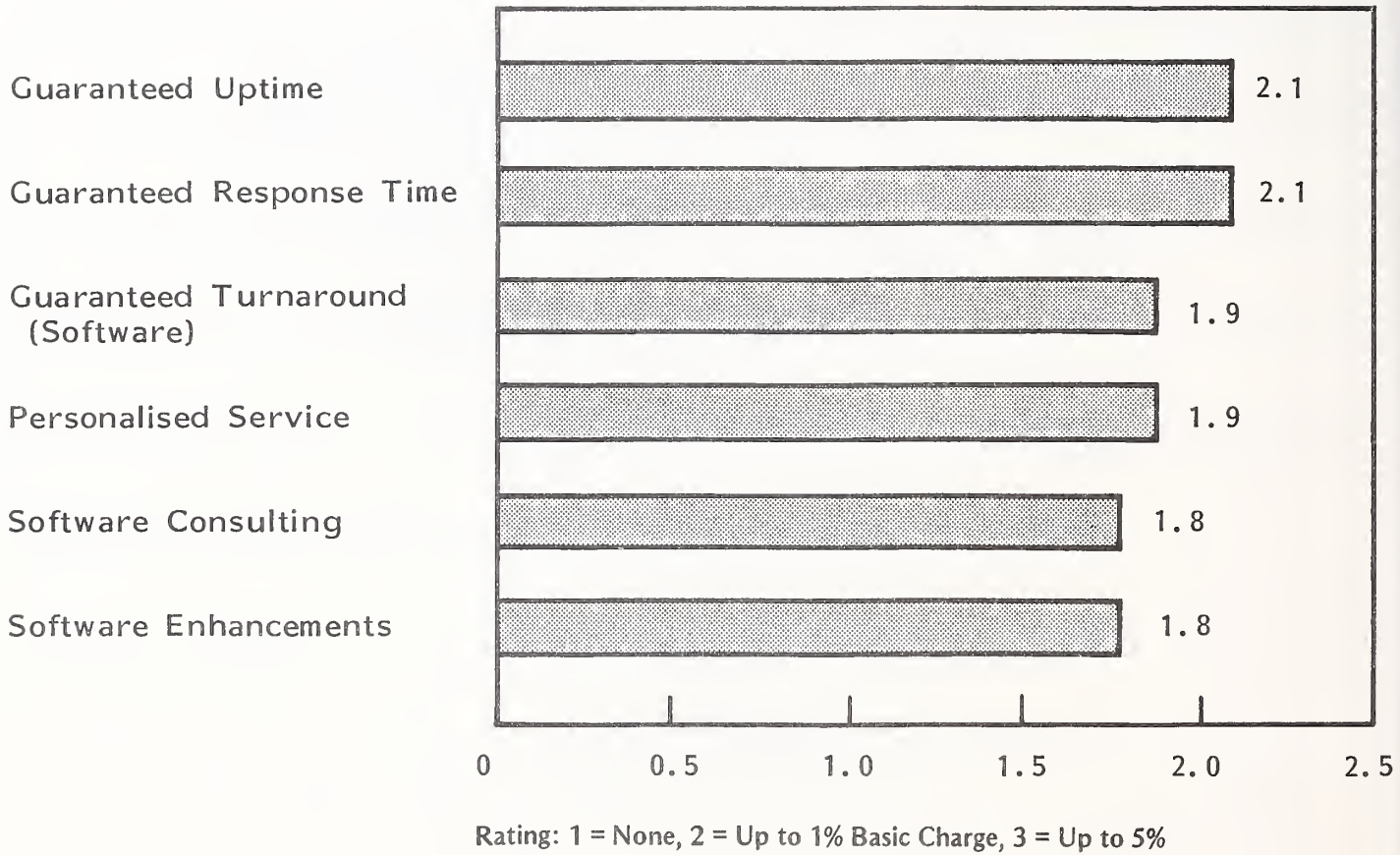


EXHIBIT V-9

USERS' WILLINGNESS TO PAY FOR
EXTRA/IMPROVED SERVICE - EUROPE
(All Systems)



SOURCE: INPUT Survey

E. PRICING

- Exhibit V-2 summarises for all European systems the average price increase for 1982 (7.6%), the expected rate of increase for 1983 (7.0%), and the 1983 maximum acceptable increase of 10.1%.
 - The expectations for pricing in 1983 are lower than in most previous years because of economic and inflation factors and increased competition.
 - Equipment vendors are finding it difficult to raise service rates as freely as they once did because users are much more alert to and sensitive about maintenance costs when they select new equipment. Furthermore, increasing competition from independent maintenance companies is beginning to be an important consideration in certain markets, especially the United Kingdom.
- As shown in Exhibit V-10, software support rates are perceived to be too high by European users. Rates for extended coverage (extra shift), ad hoc hourly rates, and basic maintenance contract prices are also too high from the users' perspective.

F. ATTITUDES AND DEMOGRAPHICS

- Exhibits V-11 through V-14 provide an overview of user attitudes towards to selected maintenance topics. Typically, European users:
 - Don't receive discounts for service, although with competition heating up, more discounting is expected in the future.

EXHIBIT V-10

USERS' VIEW OF PRICING TERMS - EUROPE (All Systems)

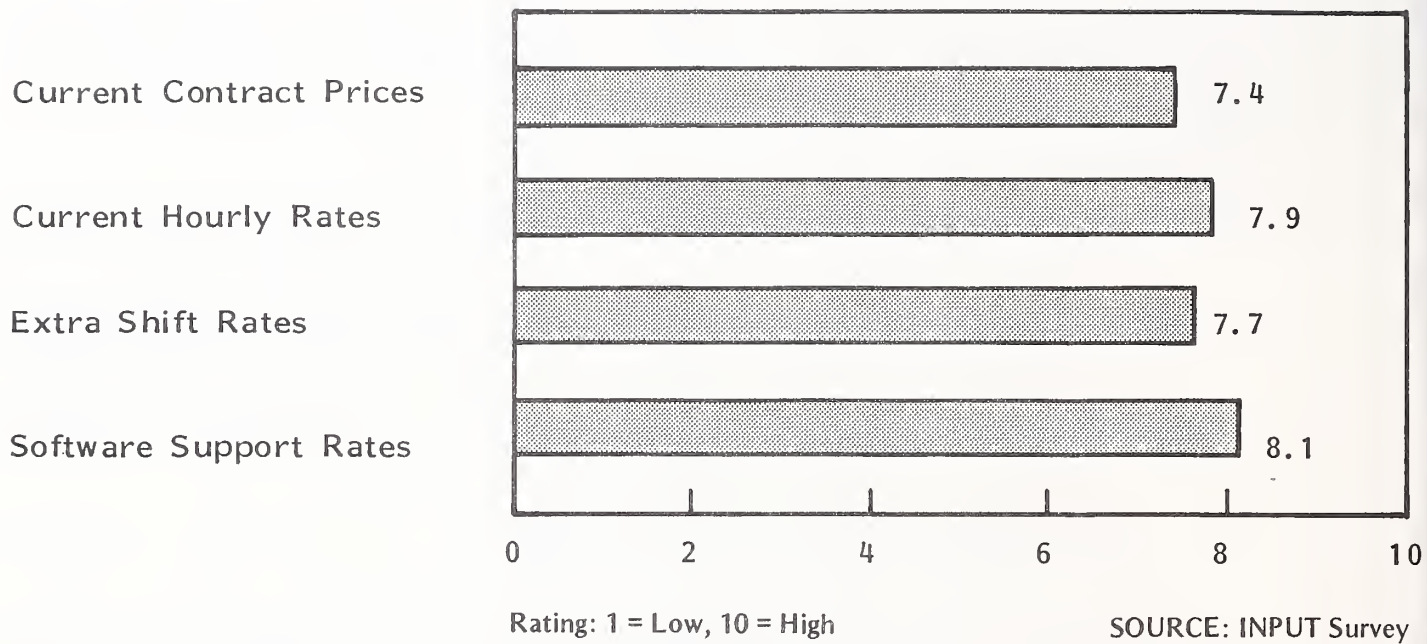
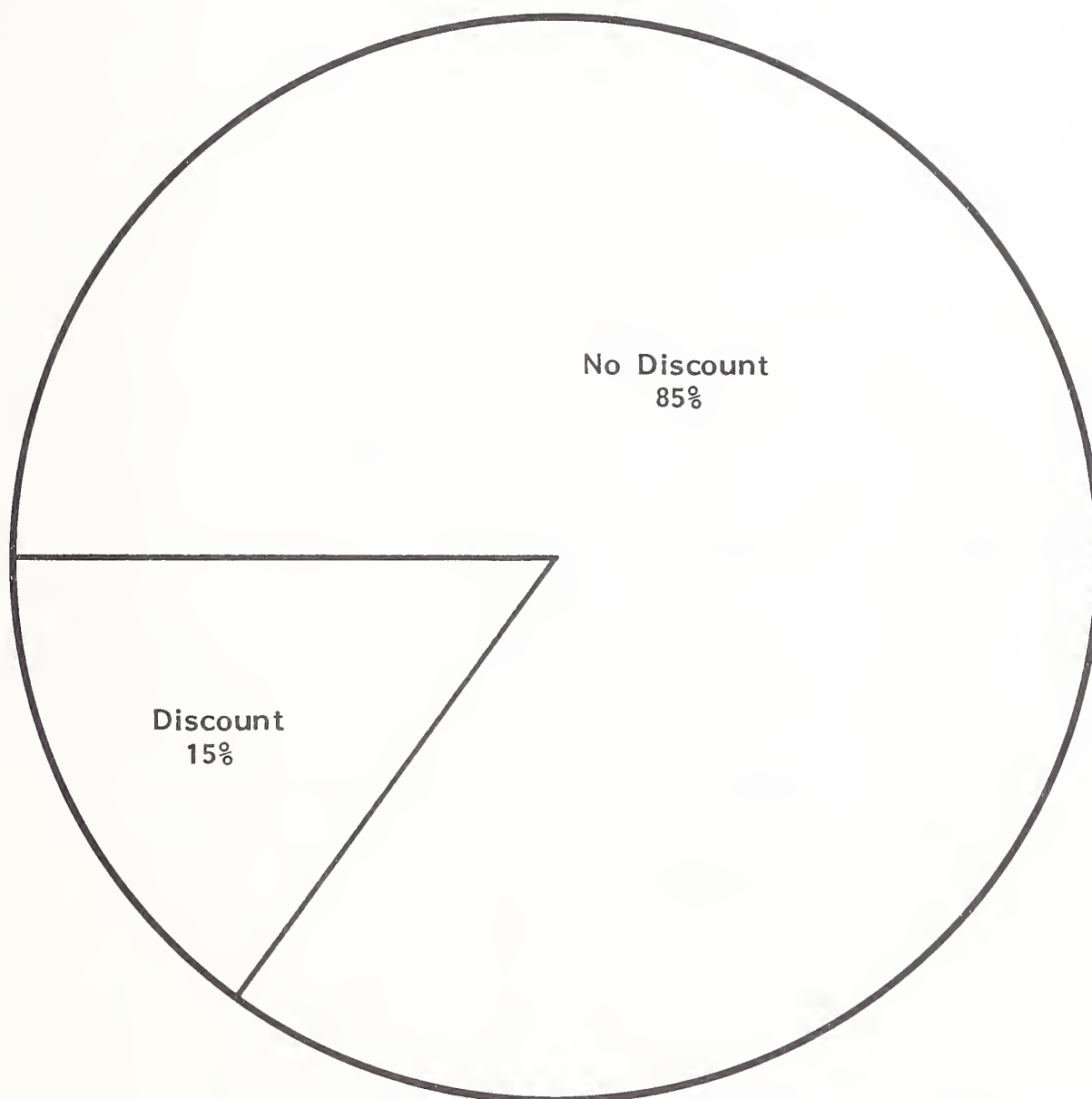


EXHIBIT V-11

MAINTENANCE DISCOUNTS RECEIVED BY USERS IN EUROPE (Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT V-12

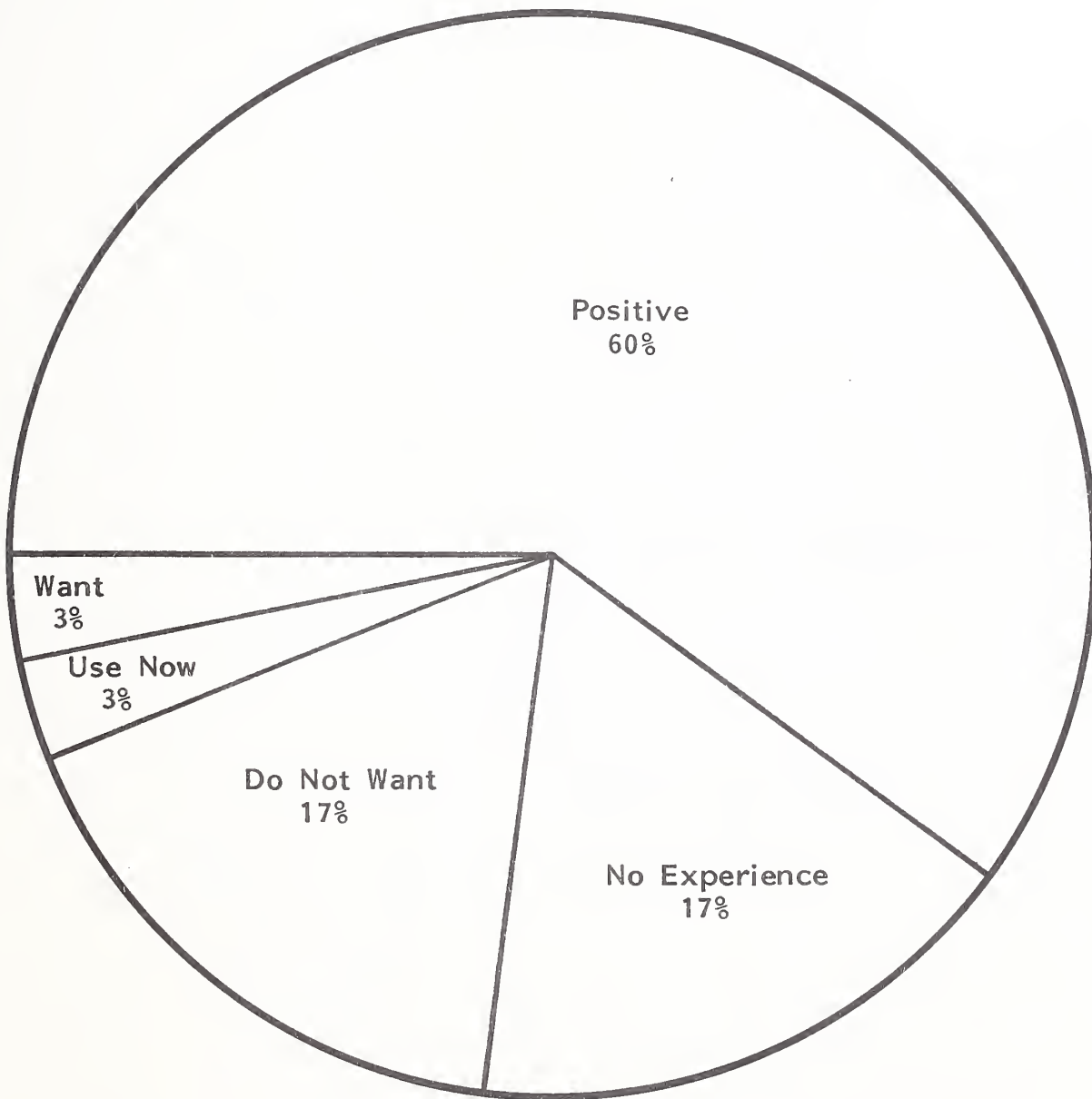
USER ATTITUDES REGARDING PREVENTIVE MAINTENANCE IN EUROPE
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT V-13

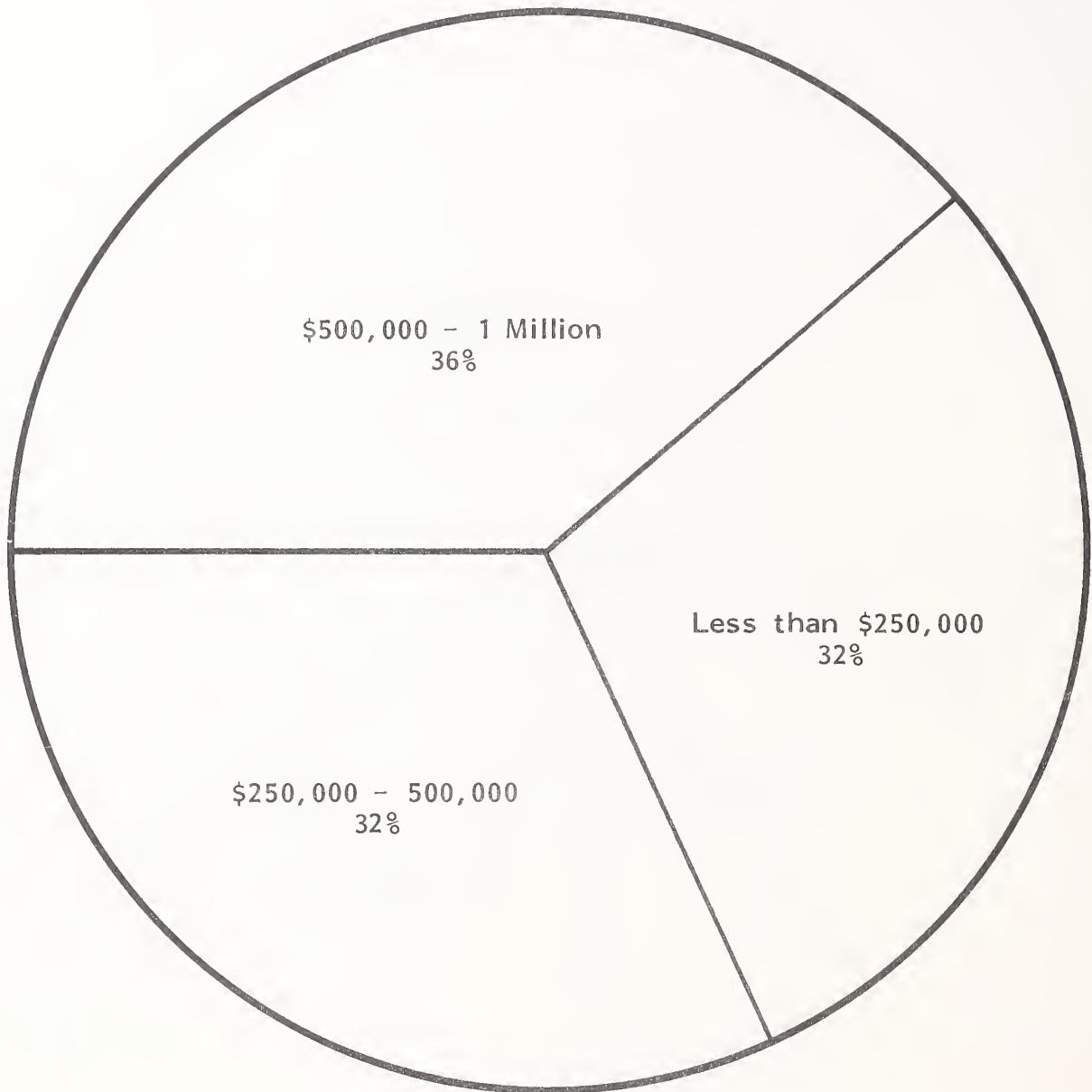
USER ATTITUDES TOWARDS REMOTE DIAGNOSTICS IN EUROPE
(Percent Mentions)



SOURCE: INPUT Survey

EXHIBIT V-14

EUROPEAN USER RESPONDENTS' 1983 INFORMATION SYSTEMS BUDGETS
(Percent Mentions)



SOURCE: INPUT Survey

- Are proponents of preventive maintenance.
- Feel positive about remote diagnostics. Vendors need to promote their remote diagnostics capabilities.
- Have information systems budgets over \$250,000.

APPENDIX A: THE UNITED KINGDOM USER DATABASE

APPENDIX A: THE UNITED KINGDOM USER DATABASE

A. COMMENTARY

- British users enjoy relatively high-quality services as competition for service business continues to flourish. Of all service issues, British users continue to rank system availability, reliability, repair time, and response time at the top of the list.
- British users feel that prices are high and that response time, while adequate, should be improved.
- As a result of these factors and the large and increasing number of TPM companies in business, there is a real threat to traditional maintenance vendors as service contracts become more competitive.
- The major service opportunity in the U.K. is TPM. Smaller independent firms can find opportunities here. The attitude of British users towards TPM is very positive.

B. QUALITY OF SERVICE

I. VENDOR RATINGS BY USER

- Exhibit A-1 summarises relative rankings of service vendors in terms of overall quality of service as perceived by United Kingdom users.
 - High marks for service are awarded to:
 - . Burroughs.
 - . Amdahl.
 - . Digital Equipment.
 - . Hewlett-Packard.
 - . IBM.
 - . Prime.
 - . Philips.
 - . Ericsson.
 - . Racal.
 - . Canon.

U.K. USER RANKING OF OVERALL VENDOR QUALITY
(Average)

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATAKOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Amdahl	9.5	-	-	-	-	-	-	-	9.0
Apple	-	-	-	-	7.0	-	-	-	-
Brit Telecom	-	-	-	-	-	-	6.2	-	-
Burroughs	6.1	7.6	7.1	-	8.0	6.0	-	-	-
CDC	8.0	5.2	5.5	-	-	-	-	-	-
Canon	-	-	-	-	-	-	-	7.5	-
DEC	8.2	8.0	8.1	8.5	5.0	7.2	-	-	10.0
DGI	-	7.5	5.5	-	-	-	-	-	-
Ericsson	-	8.0	-	-	-	6.0	-	-	-
Hewlett- Packard	7.1	7.2	7.3	-	6.7	-	-	-	6.1
Honeywell	6.3	6.2	6.6	8.0	-	3.0	-	-	6.5
IBM	7.5	8.0	7.8	8.6	5.4	6.0	7.0	6.5	7.6

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey
Continued

EXHIBIT A-1 (Cont.)

U.K. USER RANKING OF OVERALL VENDOR QUALITY (Average)

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATACOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
ICL	6.0	6.5	6.7	6.3	7.0	7.3	-	-	6.1
NAS	6.0	-	-	-	-	-	-	-	-
NCR	6.6	5.4	6.4	6.5	-	-	-	-	6.2
Philips	7.0	-	-	-	-	8.0	-	-	-
Prime	10.0	7.9	8.7	7.0	-	3.0	-	-	7.3
Racal	-	-	-	7.5	-	-	-	-	-
Sperry Univac	6.1	-	6.8	5.0	-	-	-	-	4.8
Systime	-	5.3	5.3	-	-	-	-	-	-
Texas Instruments	-	7.7	5.5	-	-	-	-	-	-
3M	-	-	-	-	-	-	-	5.3	-
Wang	-	-	-	-	-	8.0	-	-	-
Xerox	-	-	-	-	-	6.5	-	6.5	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey

- Closely following are:

- . Control Data Ltd.
- . Honeywell.
- . ICL.
- . Data General.
- . Texas Instruments.
- . British Telecom.
- . Xerox.

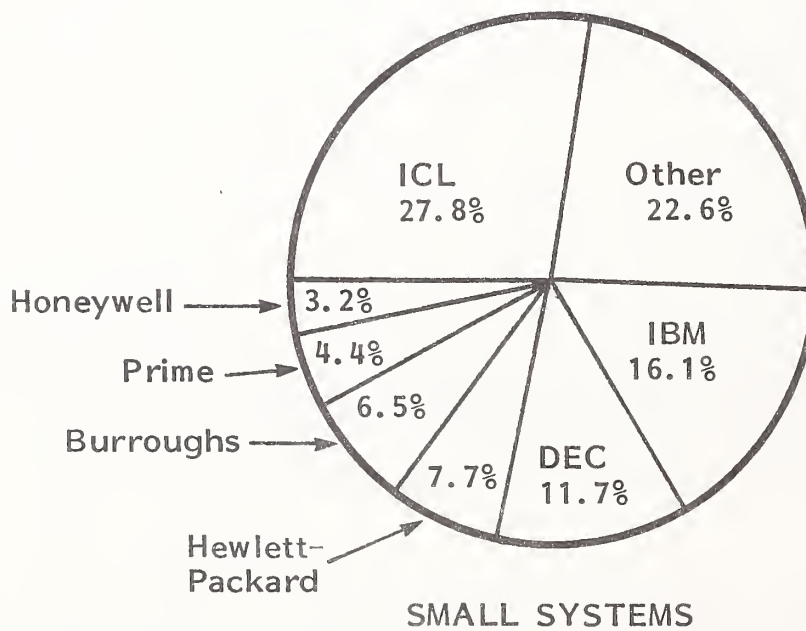
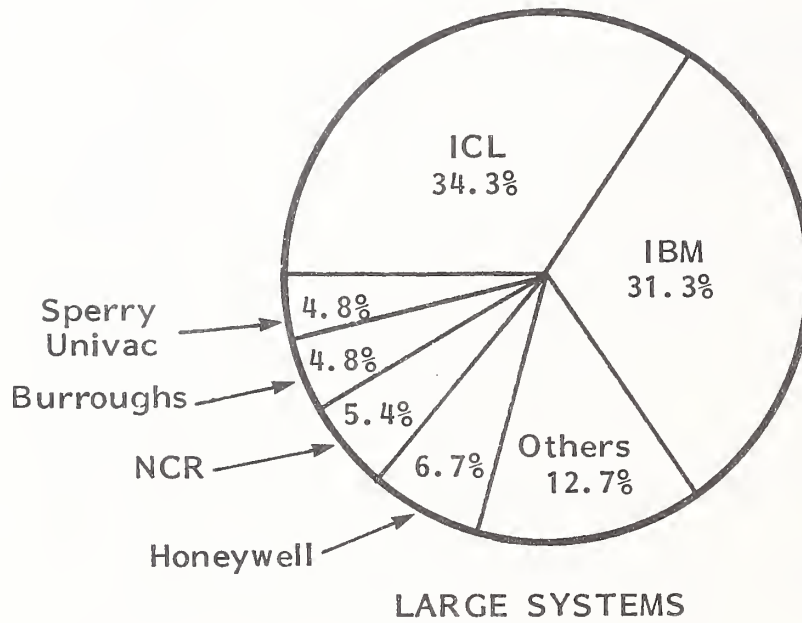
- Others include:

- . NCR.
- . Sperry.
- . NAS.
- . 3M.
- . Xerox.

- Exhibit A-2 indicates the types of equipment installed at respondent users' sites and is intended not to be a marketshare forecast.

EXHIBIT A-2

U.K. USERS' INSTALLED EQUIPMENT
(Percent Using)

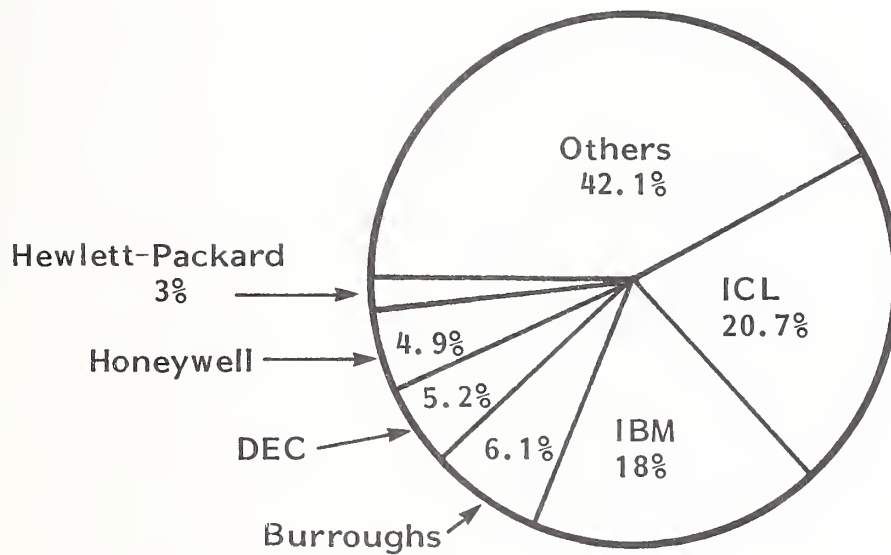


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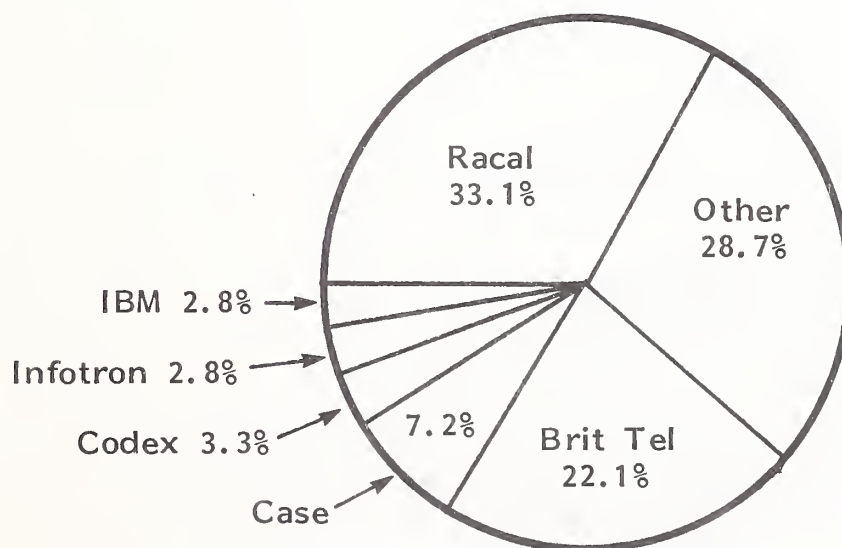
SOURCE: User Survey

EXHIBIT A-2 (Cont.)

U.K. USERS' INSTALLED EQUIPMENT
(Percent Using)



PERIPHERALS AND TERMINALS



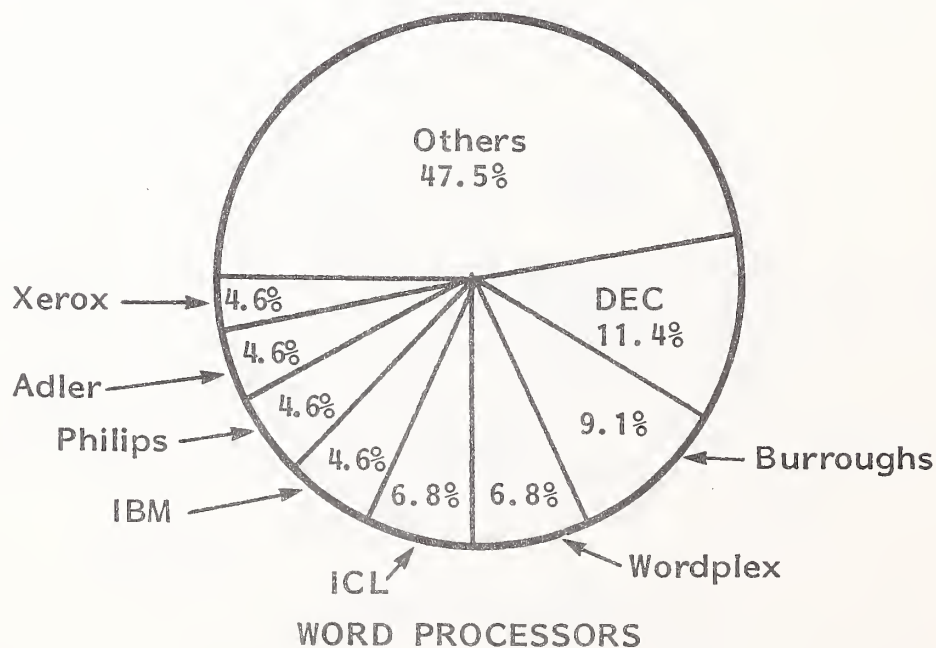
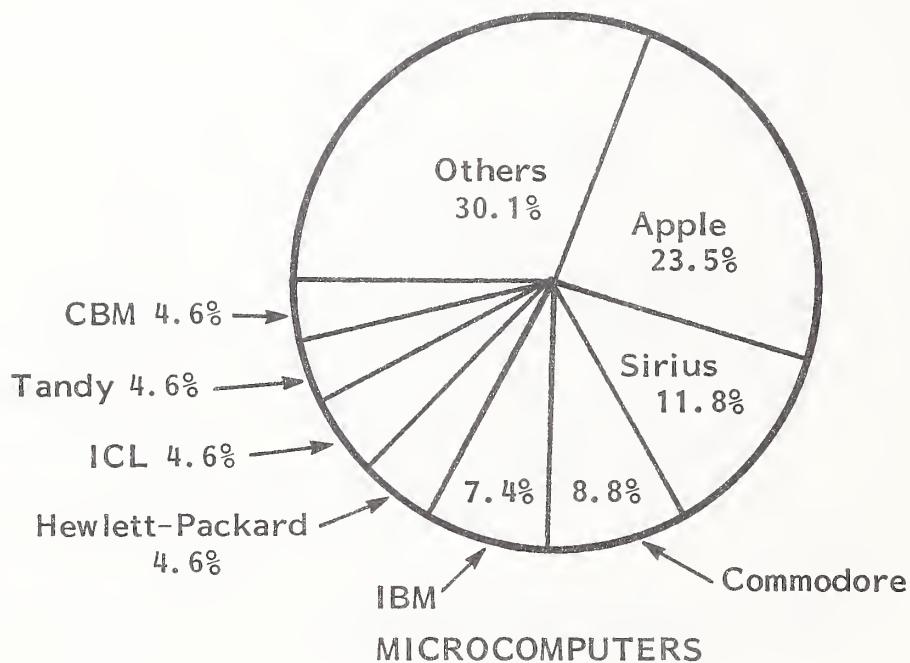
DATACOMMUNICATIONS

Continued

SOURCE: User Survey

EXHIBIT A-2 (Cont.)

U.K. USERS' INSTALLED EQUIPMENT
(Percent Using)



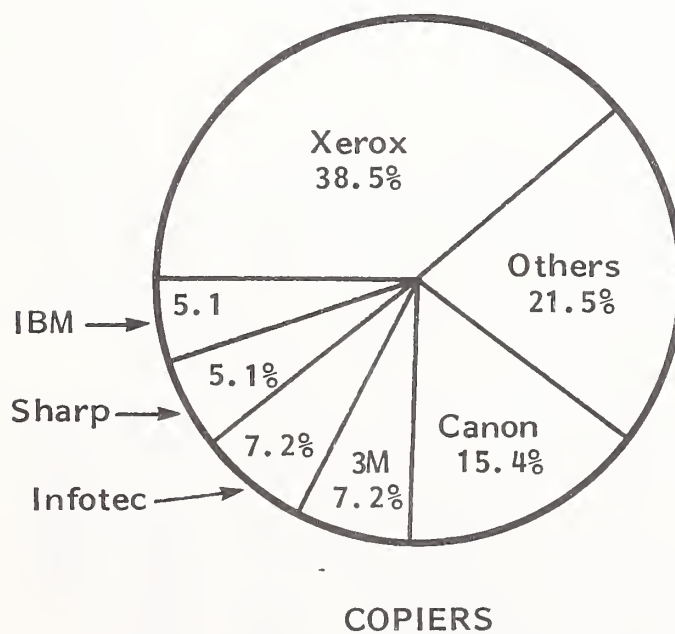
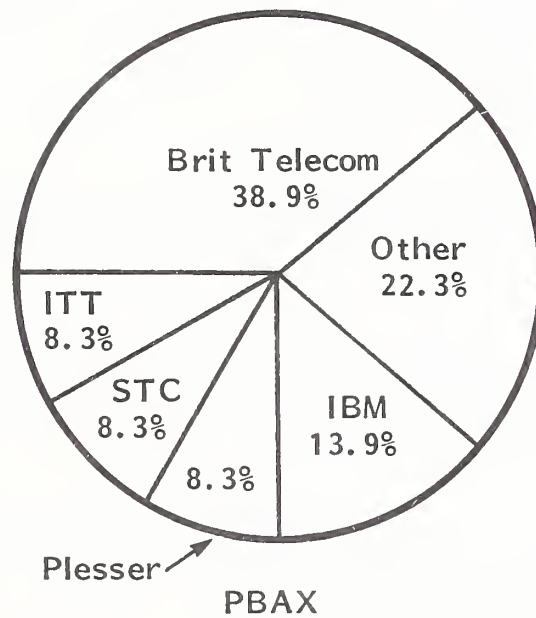
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SOURCE: User Survey

- 140 -

EXHIBIT A-2 (Cont.)

U.K. USERS' INSTALLED EQUIPMENT
(Percent Using)



Continued

SOURCE: User Survey

2. QUALITY ATTRIBUTES AND QUALITY BY PRODUCT

- Exhibit A-3 shows user ratings of quality attributes. Below average ratings exist for:
 - Remote diagnostics - peripherals and terminals, microcomputers, word processors, copiers, PBAX.
 - This reflects a high degree of user satisfaction with the quality of service provided by British vendors.

C. SERVICE ISSUES, AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

- Relative importance of maintenance issues, to users, is shown in Exhibit A-4. Most important are:
 - Availability - large systems, small systems, datacommunications, PBAX, systems software.
 - Response time - datacommunications, PBAX.
 - Repair time - PBAX.
 - Reliability - large systems, small systems, peripherals and terminals, datacommunications, word processors, PBAX, systems and applications software.

U.K. USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981
All Systems 1983	-	-	-	7.1	-	-	6.4	-	-	6.6	-	-	6.1	-	-
Large Systems	6.8	7.1	7.2	7.1	7.6	7.7	6.4	7.1	7.4	6.4	5.5	5.6	6.1	-	-
Small Systems	7.1	7.0	7.0	7.3	7.3	7.2	6.4	6.9	7.0	6.4	6.6	6.2	6.0	-	-
Peripherals and Terminals	7.1	7.4	7.2	7.3	7.1	7.4	6.5	7.1	7.4	6.7	7.0	6.6	6.1	-	-
Datacommunications	7.1	-	-	7.2	-	-	6.5	-	-	6.9	-	-	6.0	-	-
Personal Computers	6.3	-	-	6.3	-	-	6.0	-	-	5.9	-	-	5.4	-	-
Word Processors	6.7	7.0	7.2	6.6	7.0	6.0	6.0	6.5	6.2	6.3	6.4	6.2	5.7	-	-
Copiers	6.6	-	-	6.4	-	-	6.1	-	-	6.6	-	-	-	-	-
PBX	6.6	-	-	6.6	-	-	6.6	-	-	6.9	-	-	6.4	-	-
Systems Software	6.7	6.9	6.8	6.9	7.0	6.8	6.4	6.8	7.0	-	-	-	6.3	-	-
Applications Software	6.2	6.1	4.2	7.0	6.1	4.0	6.2	6.6	4.2	-	-	-	6.4	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey
Continued

EXHIBIT A-3 (Cont.)

U.K. USER QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			QUALITY OF MARKETING & SALESPEOPLE			PRODUCT RELIABILITY		
	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981
All Systems 1983	6.0	-	-	5.1	-	-	5.8	-	-	5.9	-	-	5.8	-	-	7.7	-	-
Large Systems	6.2	-	-	5.0	5.3	6.8	5.8	6.6	6.0	5.8	6.5	5.8	5.6	-	-	7.6	-	-
Small Systems	6.1	-	-	5.0	6.4	5.0	5.9	6.3	5.6	5.7	5.7	5.8	5.8	-	-	7.6	-	-
Peripherals and Terminals	6.1	-	-	4.8	7.3	6.0	5.8	6.2	6.2	5.9	5.9	6.4	5.8	-	-	7.7	-	-
Datacommunications	6.0	-	-	6.0	-	-	5.8	-	-	6.5	-	-	6.0	-	-	8.1	-	-
Personal Computers	6.0	-	-	4.4	-	-	5.5	-	-	6.3	-	-	5.4	-	-	7.6	-	-
Word Processors	5.2	-	-	4.2	7.0	-	5.4	6.5	6.4	5.9	4.5	5.8	6.1	-	-	7.6	-	-
Copiers	5.5	-	-	3.2	-	-	5.6	-	-	6.0	-	-	6.0	-	-	6.2	-	-
PBX	5.4	-	-	4.3	-	-	5.6	-	-	5.9	-	-	5.3	-	-	7.0	-	-
Systems Software	5.9	-	-	5.4	7.3	4.8	5.9	-	-	5.7	5.6	6.0	5.7	-	-	7.6	-	-
Applications Software	5.6	-	-	5.7	9.0	-	5.6	5.8	5.0	5.8	5.6	4.4	5.8	-	-	7.3	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

U.K. USERS' RATING OF IMPORTANCE OF MAINTENANCE ISSUES

SERVICE ISSUES	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems In United Kingdom		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		1983	1982	1981
Systems Availability	9.3	9.0	8.9	9.8	7.5	8.7	9.8	7.5	9.3	8.9		8.9	9.5	9.9
Response Time	8.8	8.7	8.5	9.1	6.9	8.1	9.0	7.5	8.9	8.7		8.6	8.9	8.9
Repair Time	8.9	8.5	8.4	8.7	7.1	8.2	9.0	7.1	8.9	8.6		8.5	8.6	8.9
Equipment Reliability	9.2	9.1	9.1	9.4	8.1	9.0	9.5	8.5	9.2	9.3		9.1	9.3	9.6
Software Maintenance	8.3	7.3	7.2	7.4	6.8	7.4	8.8	-	8.5	8.8		7.7	7.1	7.9
Price of Maintenance	7.1	7.1	6.9	6.9	6.7	7.0	7.0	6.9	6.6	7.0		7.0	7.5	8.6
Preventive Maintenance	6.7	6.4	6.0	5.8	5.0	5.6	6.5	6.1	5.8	6.1		6.1	6.1	7.6
Having Same Engineer Each Call	5.9	6.1	5.9	5.2	4.7	5.5	4.9	5.0	6.0	6.5		5.8	N/A	N/A
Remote Diagnostics	5.7	5.3	4.8	6.0	4.3	4.3	5.3	-	5.9	5.9		5.3	4.5	8.6
Uptime Guarantees	7.0	6.5	6.3	6.7	5.2	6.5	7.1	4.8	7.0	7.1		6.5	7.0	6.9
Having a Choice for Service	4.8	4.6	4.8	4.7	4.9	4.7	5.4	4.6	4.4	4.4		4.7	N/A	N/A

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

- For all systems the average user response to service issues for 1983 is:
 - Viewed as most important:
 - Reliability.
 - Availability.
 - Response time.
 - Repair time.
 - Viewed as important:
 - Software maintenance.
 - Price of maintenance.
 - Uptime guarantees.
 - Preventive maintenance.
 - Viewed as least important:
 - Having the same engineer for each call.
 - Remote diagnostics.
 - Having a choice for service.
- System availability, as shown in Exhibit A-5, demonstrates a reasonable overall performance that is both well outside the threshold of pain and adequately near the ideal.

EXHIBIT A-5

U.K. RESPONDENTS' VIEW OF SYSTEM AVAILABILITY (Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Receive	93.4%	93.3%	94.2%	95.8%	94.8%	93.0%	96.3%	91.9%	94.6%	91.6%	94.0%
Ideally Would Like	98.7	97.6	98.4	99.4	98.3	97.0	99.4	99.1	98.9	99.1	98.4
TOP*	93.3	90.7	91.5	94.6	91.0	89.5	94.5	89.1	93.1	93.1	91.9
<u>1982</u>											
Received	96.7	94.8	93.3	N/A	N/A	97.4	N/A	N/A	98.3	97.0	-
Ideally Would Have Liked	99.1	96.9	94.5	N/A	N/A	99.4	N/A	N/A	95.2	100.0	-
TOP*	93.4	94.8	95.2	N/A	N/A	96.2	N/A	N/A	94.5	97.0	-
<u>1981</u>											
Received	96.8	96.5	96.2	N/A	N/A	94.5	N/A	N/A	97.0	92.0	-
Ideally Would Have Liked	98.8	98.8	99.0	N/A	N/A	99.0	N/A	N/A	99.0	98.6	-
TOP*	92.7	94.5	94.9	N/A	N/A	95.7	N/A	N/A	97.0	96.0	-

*TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Survey

- Response and repair times are shown in Exhibits A-6 and A-7 respectively. Repair times fall within reasonable industry standards. Response times are also below the threshold of pain but are close to being unacceptable.

D. DESIRE FOR DIFFERENT CONTRACTS, WILLINGNESS TO AID SERVICER, AND WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

- British users show a fair amount of curiosity about new contract forms that are more bundled and flexible. As shown in Exhibit A-8, automatic renewal is mildly interesting whereas long-term contracts and annual invoicing are less desirable.
- Exhibit A-9 indicates a moderately strong willingness on the part of the United Kingdom users to participate in helping to solve maintenance problems - for a discount. Diagnostic assistance and software patching are better candidates for self-service than are replacing boards or transporting faulty portable units to repair centres. Microcomputer vendors should take note of users' low interest in carrying in failed units. A major marketing effort is required to reverse this.
- British users seem reluctant to pay for extra or improved services as shown by Exhibit A-10.

E. PRICING

- The United Kingdom users receive price increases that are reasonably close to inflation and are quite near the ideal, as shown in Exhibit A-11.
- Prices for services are rated on the expensive side, as shown in Exhibit A-12.

EXHIBIT A-6

U.K. RESPONDENTS' VIEW OF RESPONSE TIME (Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Receive	4.8	5.1	6.2	8.0	8.8	7.3	8.5	10.2	5.5	10.1	6.4
Ideal	2.1	2.9	2.9	2.9	4.6	2.3	2.0	4.7	1.7	4.3	2.9
TOP*	6.1	8.4	10.3	8.7	15.4	8.7	3.1	11.6	6.9	8.1	8.9

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT A-7
U.K. RESPONDENTS' VIEW OF REPAIR TIME
(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Receive	3.9	3.2	3.7	3.3	4.7	3.3	2.5	2.4	7.5	8.7	4.0
Ideal	2.1	2.1	2.0	1.6	3.1	1.4	1.6	1.4	4.6	3.6	2.2
TOP*	6.5	6.5	7.4	4.5	10.2	6.7	3.6	7.7	8.5	9.1	7.0

*TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT A-8

U.K. USERS' DESIRE FOR DIFFERENT CONTRACTS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Long-Term Contract	4.8	4.2	4.3	4.3	4.0	4.1	3.3	4.2	5.1	4.7	4.4	
Automatic Renewal	5.2	5.4	5.3	4.7	4.7	4.6	4.6	4.9	5.6	6.2	5.2	
Annual Invoicing	4.3	4.7	4.4	4.5	5.8	3.8	3.1	4.1	4.3	4.5	4.5	
More Flexibility	6.6	6.2	6.3	5.9	6.2	6.1	5.4	6.3	6.1	6.4	6.2	
Bundling*	6.0	5.9	6.0	5.9	5.9	5.9	5.8	6.0	6.1	5.9	6.0	

Rating 1 = Undesirable, 10 = Very Desirable

* 1 = Bundled, 10 = Unbundled

SOURCE: INPUT Survey

EXHIBIT A-9

U.K. USERS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT

HELP TO VENDOR	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Helping to Diagnose	7.8	7.9	7.6	7.5	7.7	6.7	5.1	5.6	8.2	8.4	7.6	
Helping Replace Boards	5.7	6.2	6.2	5.9	7.2	5.0	4.5	-	-	-	6.0	
Helping to Patch Software	7.1	6.9	7.0	6.0	7.6	5.6	5.3	-	7.7	8.4	6.9	
Delivering Portable Machines to Repair Centres	4.3	4.3	4.3	4.5	5.4	3.0	3.3	-	-	-	4.3	

Rating: 1 = Unwilling, 10 = Willing

SOURCE: INPUT Survey

EXHIBIT A-10

U.K. USERS' WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Guaranteed Uptime	2.0	2.2	2.0	2.4	2.1	2.1	2.4	2.4	2.0	1.9	2.1
Guaranteed Response Time	1.9	2.1	2.0	2.1	1.8	1.9	2.1	2.1	1.9	2.0	2.0
Guaranteed Turnaround Time on Software	1.8	1.8	1.7	1.8	1.4	1.7	2.1	-	2.0	2.0	1.8
Software Consulting From Servicer	1.7	1.7	1.5	1.5	1.5	1.4	1.6	-	1.7	1.8	1.6
Software Enhancements From Servicer	1.8	1.8	1.6	1.5	1.7	1.6	1.4	-	2.0	1.9	1.7
Personalised Service	1.4	1.6	1.5	1.4	1.1	1.5	1.1	1.6	1.6	1.6	1.5

Rating: 1 = None, 2 = Up to 1% Basic Charge, 3 = Up to 5%, 4 = 10%, 5 = 15%

SOURCE: INPUT Survey

EXHIBIT A-11
U.K. RESPONDENTS' VIEW OF MAINTENANCE PRICING
 (Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Received in 1982	7.9%	7.7%	8.0%	7.5%	6.3%	6.3%	5.4%	6.1%	6.8%	6.8%	7.4%
Expected 1983	6.7	7.2	6.3	5.5	5.7	6.5	5.6	5.1	6.7	5.7	6.4
TOP* 1983	9.0	10.8	9.7	9.6	8.5	9.0	8.2	7.4	9.6	9.7	9.7
<u>1982</u>											
Received in 1981	8.7	12.2	8.0	N/A	N/A	7.0	N/A	N/A	10.0	N/A	-
Expected 1982	7.8	9.1	8.0	N/A	N/A	12.0	N/A	N/A	7.0	3.0	-
TOP* 1982	8.8	12.0	11.2	N/A	N/A	10.0	N/A	N/A	6.3	5.0	-
<u>1981</u>											
Received in 1980	11.3	13.4	11.3	N/A	N/A	9.9	N/A	N/A	10.9	N/A	-
Expected 1981	11.0	10.4	10.9	N/A	N/A	9.3	N/A	N/A	9.7	11.6	-
TOP* 1981	15.8	16.4	6.5	N/A	N/A	14.5	N/A	N/A	14.7	15.6	-

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT A-12

U.K. RESPONDENTS' VIEW OF MAINTENANCE PRICING TERMS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in United Kingdom
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Current Contract Prices:	7.2	7.1	7.1	6.6	6.4	6.9	6.9	6.1	6.9	7.0	7.0	
Current Hourly Rates:	8.0	7.6	7.9	7.3	6.6	7.5	7.7	7.1	8.0	7.8	7.7	
Extra Shift Rates:	9.0	7.5	7.7	6.9	6.4	7.7	8.1	6.8	7.7	7.9	7.6	
Software Support Rates:	7.4	7.2	7.3	6.4	6.8	7.2	6.7	-	7.2	6.7	7.1	

SOURCE: INPUT Surveys

Rating: 1 = Too Low, 10 = Too High

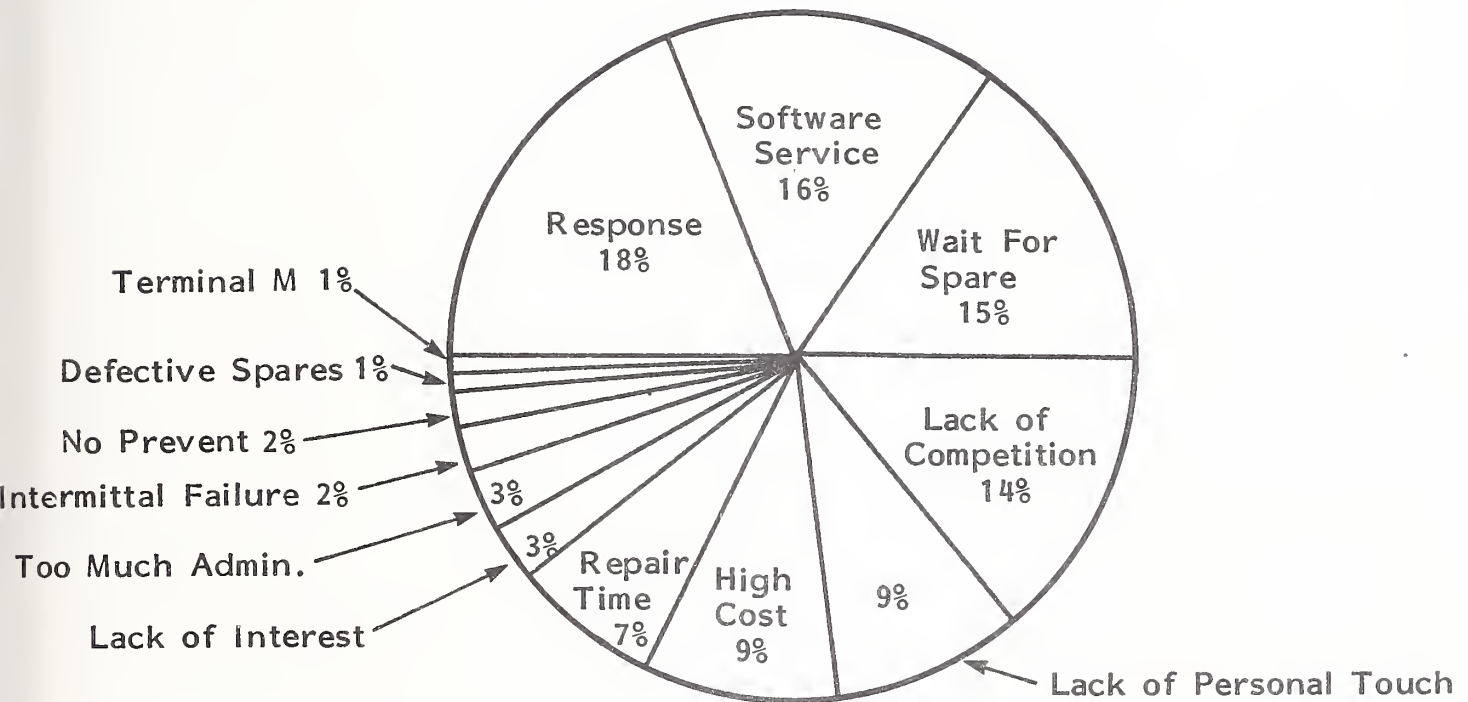
F. ATTITUDES AND DEMOGRAPHICS

- Exhibit A-13 illustrates the United Kingdom user attitudes on a variety of maintenance issues and present demographic information.
 - British users are most concerned about response time and software service. Delays and the high cost of service are annoyances.
 - To improve service, users suggest more spare parts, better training for engineers, and a more personal approach to service.
 - British users are positive about the capabilities of vendor service organisations and their attitude, response, and reliability.
- Typically, the United Kingdom users:
 - Favour preventive maintenance.
 - Do not receive maintenance discounts.
 - Are very interested in TPM.
- The United Kingdom user respondents typically are in manufacturing, employ less than 500 people, and spend less than \$250,000 for information processing each year.

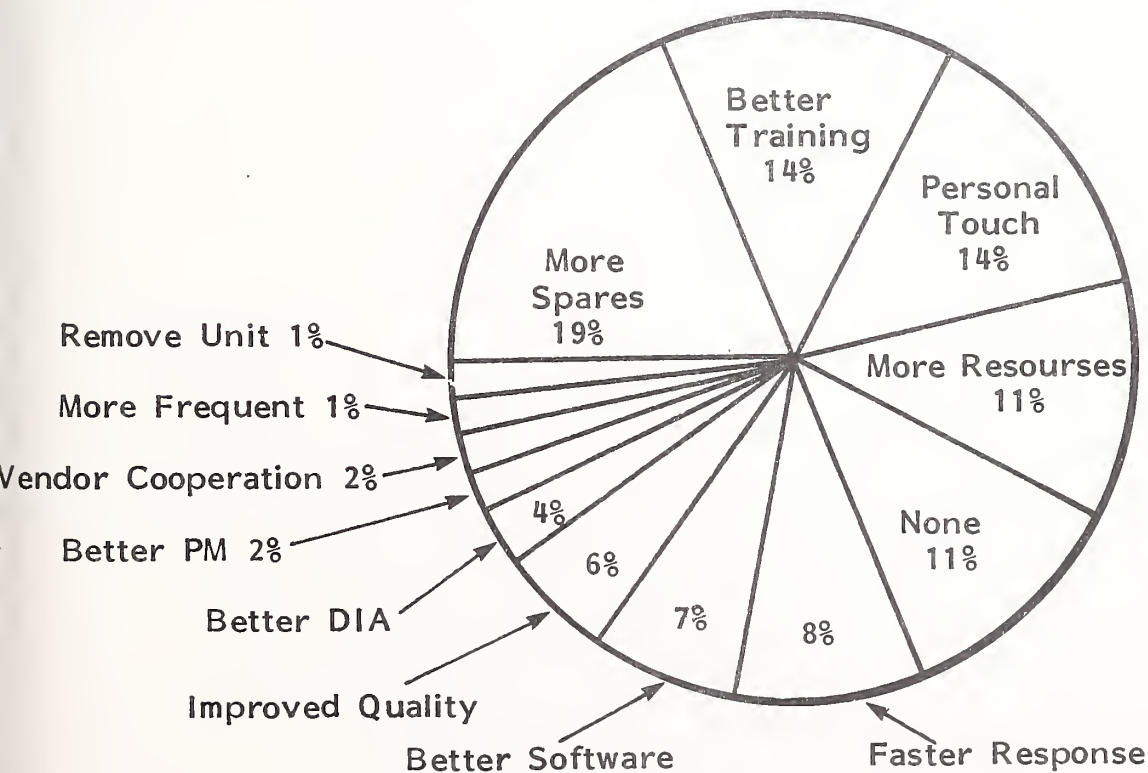
EXHIBIT A-13

DEMOGRAPHICS IN U.K.

USER ATTITUDES TOWARDS WORST FEATURES



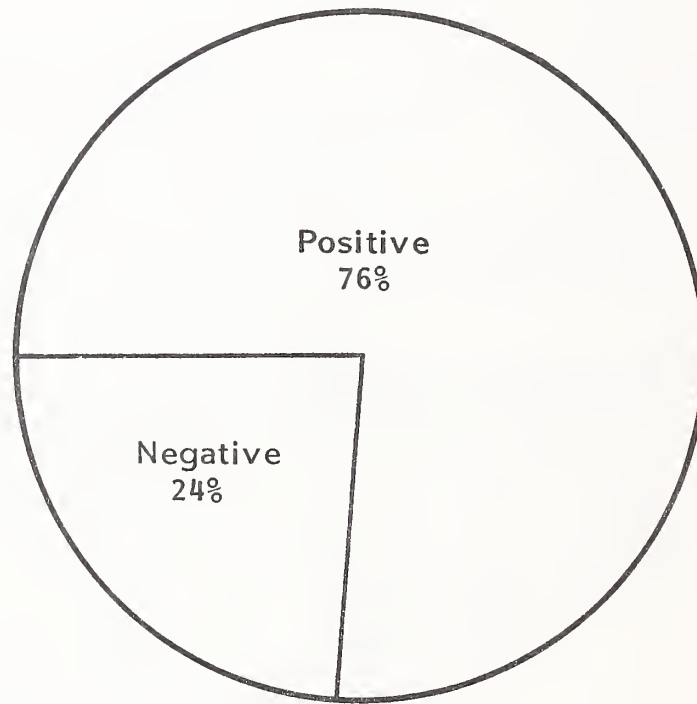
USER SUGGESTIONS FOR SERVICE IMPROVEMENTS



SOURCE: INPUT Survey Continued

DEMOGRAPHICS IN U.K.

USER ATTITUDES REGARDING PREVENTIVE MAINTENANCE

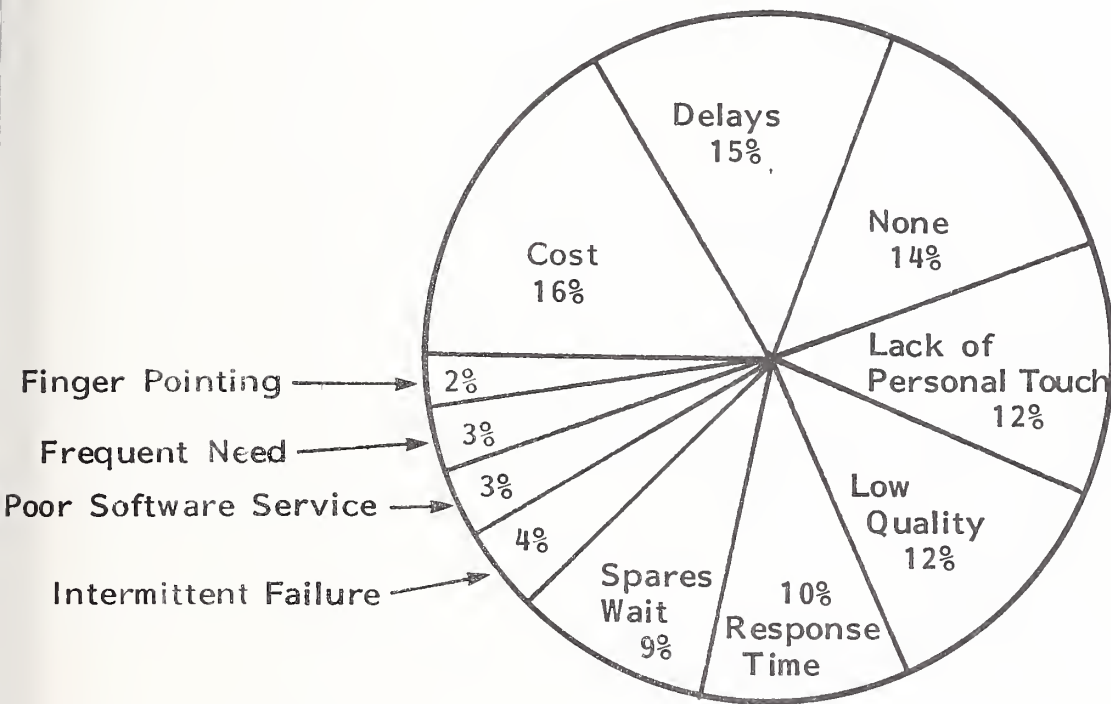


SOURCE: INPUT Survey
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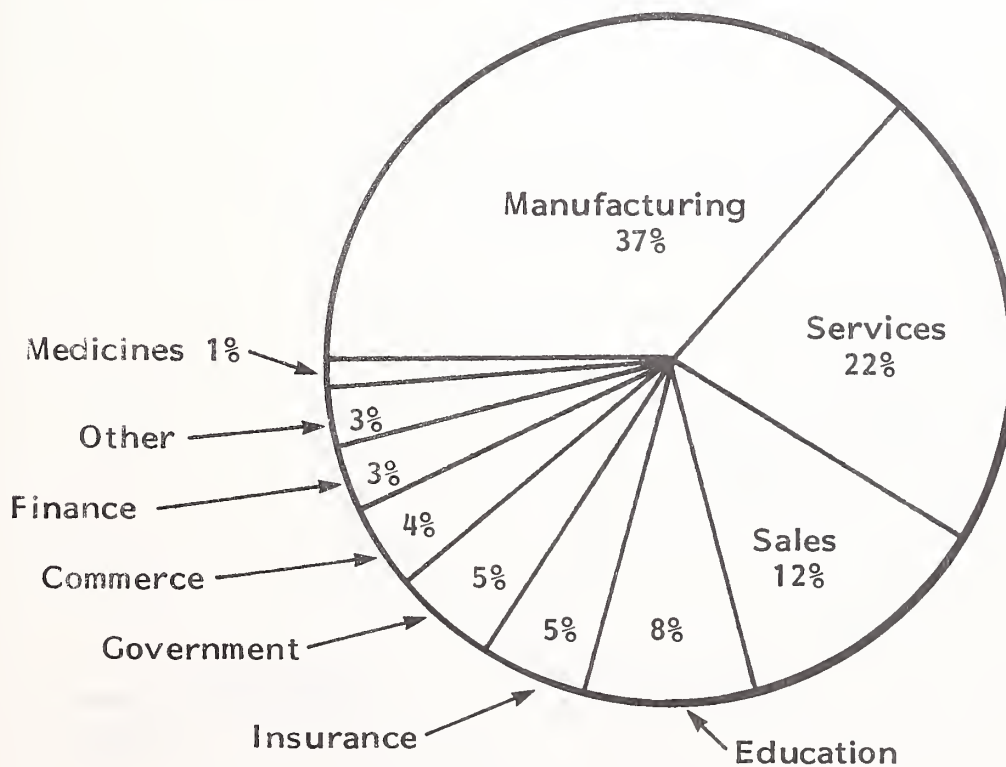
EXHIBIT A-13 (Cont.)

DEMOGRAPHICS IN U.K.

U.K. USER COMPLAINTS ABOUT SERVICE



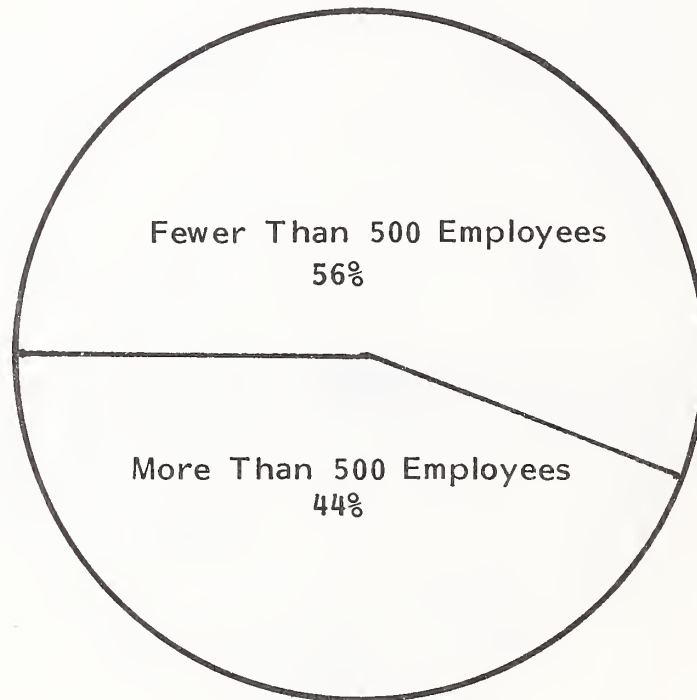
USER RESPONDENTS BY BUSINESS TYPE



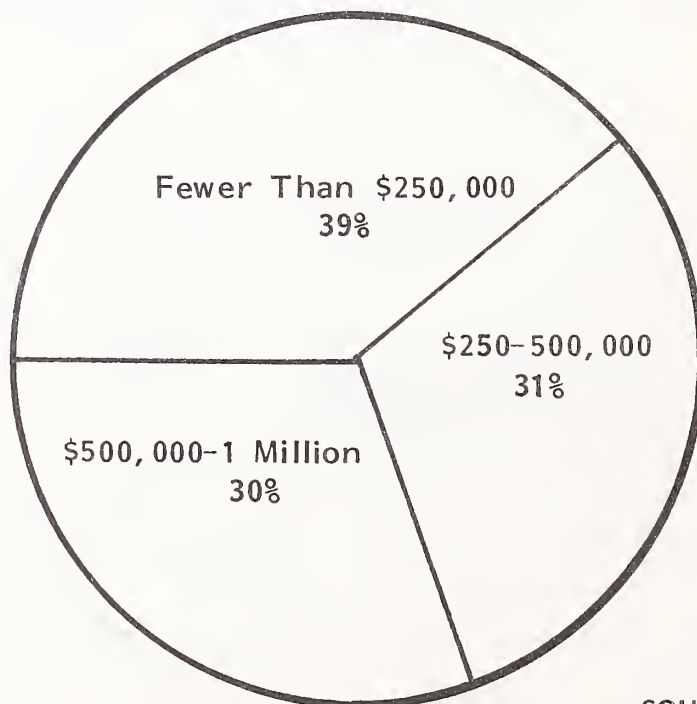
SOURCE: INPUT Survey
Continued

DEMOGRAPHICS IN U.K.

USER RESPONDENTS BY SIZE OF COMPANY



USER RESPONDENTS' 1983 INFORMATION SYSTEMS BUDGETS

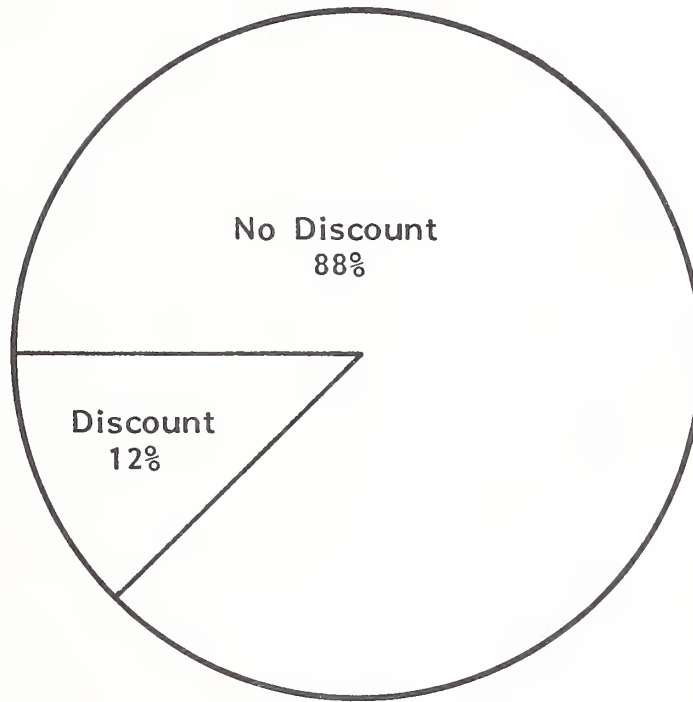


SOURCE: INPUT Survey
Continued

EXHIBIT A-13 (Cont.)

DEMOGRAPHICS IN U.K.

MAINTENANCE DISCOUNTS



SOURCE: INPUT Survey
Continued

APPENDIX B: WEST GERMAN USER DATABASE

APPENDIX B: WEST GERMAN USER DATABASE

A. COMMENTARY

- Enjoying high performance and favourable response and repair times, West German users are very satisfied with the service they are receiving.
- Pricing for services is generally acceptable and reasonable.
- Maintenance vendors in Germany have worked hard to satisfy their users and as a result the users are very loyal.

B. QUALITY OF SERVICE

I. VENDOR RATINGS BY USER

- Exhibit B-1 summarises relative rankings of service vendors in terms of overall quality as perceived by West German users.
 - Siemens, Digital Equipment Corporation, and Nixdorf enjoy a good reputation for service.
 - Rankings for IBM service are above average to good.

EXHIBIT B-1

GERMAN USER RANKING OF OVERALL VENDOR QUALITY

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATAKOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Amdahl	8.0	-	-	-	-	-	-	-	-
Burroughs	-	-	10.0	-	-	10.0	-	-	-
DEC	8.0	8.0	8.0	-	-	8.0	-	-	-
CII HB	6.6	-	5.4	5.0	-	-	-	-	5.0
Hewlett- Packard	-	-	8.0	-	-	-	-	-	-
IBM	7.5	7.9	7.3	6.6	-	6.0	6.0	7.4	7.3
NCR	10.0	8.0	-	-	-	-	-	-	-
Philips	-	-	-	-	-	-	-	5.0	-
Sperry Univac	8.0	-	8.0	6.0	-	-	-	-	-
Nixdorf	8.7	7.6	7.0	-	-	-	-	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey
Continued

GERMAN USER RANKING OF OVERALL VENDOR QUALITY

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATACOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Siemens	7.2	6.7	6.8	8.5	10.0	8.0	8.4	-	-
Apple	-	-	-	-	8.0	-	-	-	-
UTS	-	-	-	-	-	8.0	-	-	-
Xerox	-	-	-	-	-	-	-	6.8	-
Data General	-	5.0	5.0	-	-	-	-	-	-
BASF	-	8.0	-	8.3	-	-	-	-	-
Racal	-	-	-	7.7	-	-	-	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey

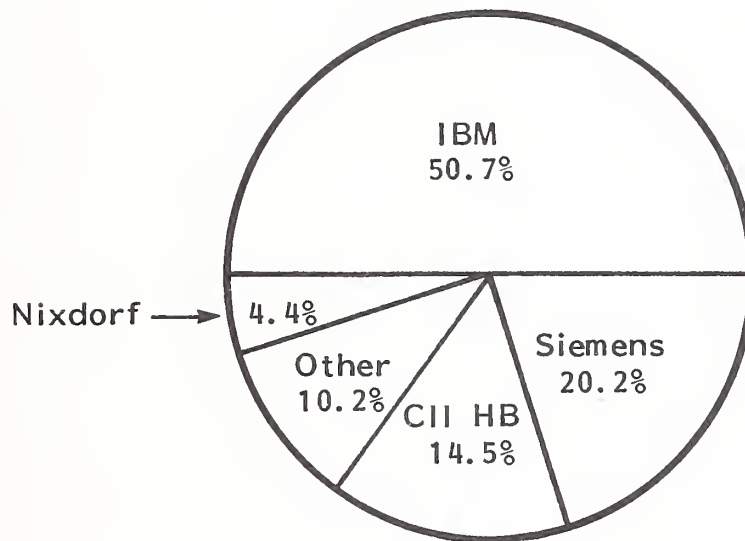
- CII Honeywell Bull service is average to good.
 - There were no ratings below average.
 - Exhibit B-2 indicates the types of equipment installed at respondent users sites and is not intended to be a marketshare forecast.
2. QUALITY ATTRIBUTES AND QUALITY BY PRODUCT
- Exhibit B-3 shows user ratings of quality attributes. Below average ratings occur for:
 - Remote diagnostics - PBAX; systems and applications software.
 - Quality of information - PBAX.
 - Preventive maintenance - copiers, and applications software.

C. SERVICE ISSUES, AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

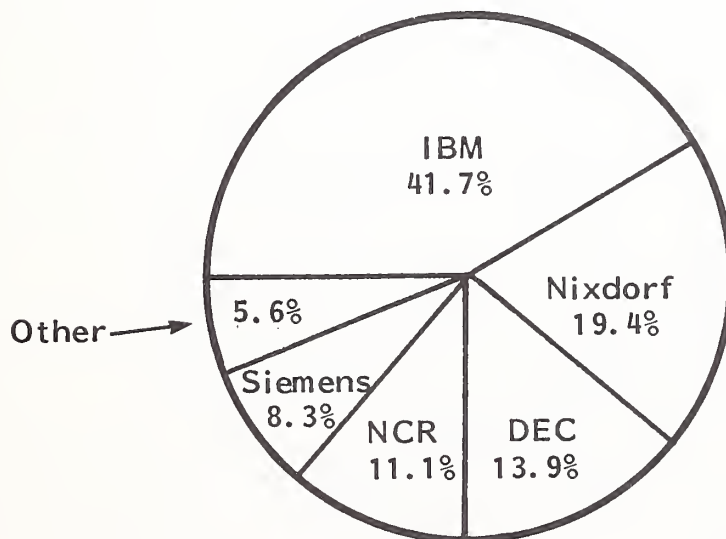
- Relative importance of maintenance issues to users is shown in Exhibit B-4. Most important are:
 - Systems availability for large systems, small systems, peripherals and terminals, datacommunications, PBAX, and applications software.
 - Response time - large systems, peripherals and terminals, datacommunications, PBAX, and systems and applications software.

EXHIBIT B-2

GERMAN USERS' INSTALLED EQUIPMENT
(Percent Using)



LARGE SYSTEMS

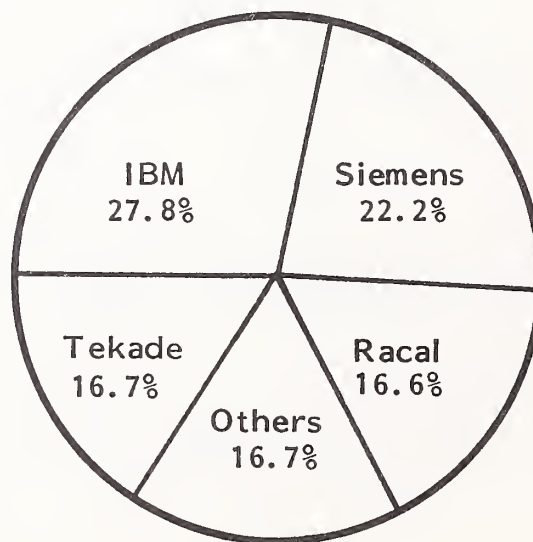
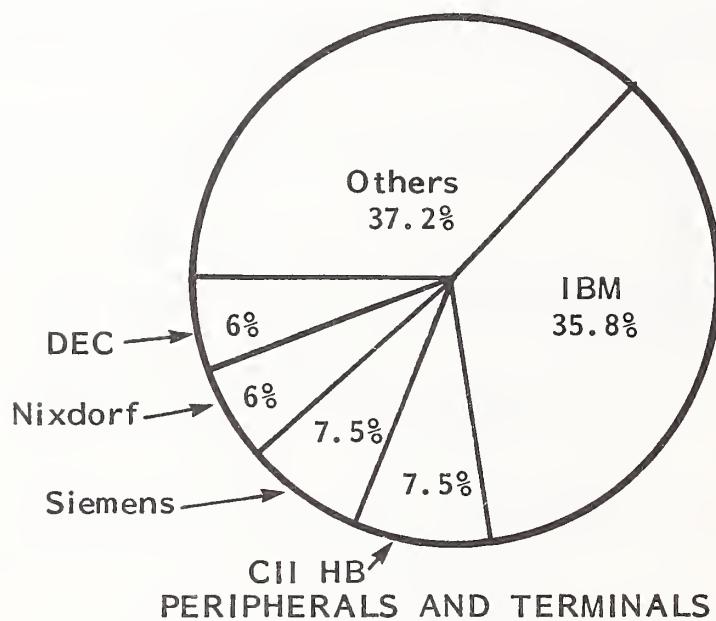


SMALL SYSTEMS

SOURCE: User Survey

EXHIBIT B-2 (Cont.)

GERMAN USERS' INSTALLED EQUIPMENT
(Percent Using)



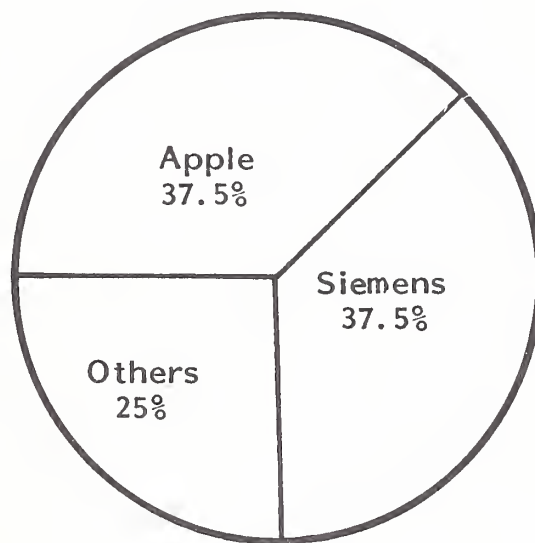
DATA COMMUNICATIONS

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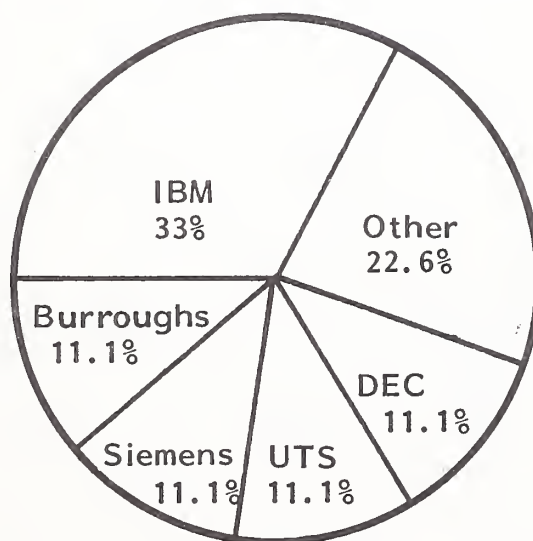
SOURCE: User Survey

EXHIBIT B-2 (Cont.)

GERMAN USERS' INSTALLED EQUIPMENT
(Percent Using)



MICROCOMPUTERS



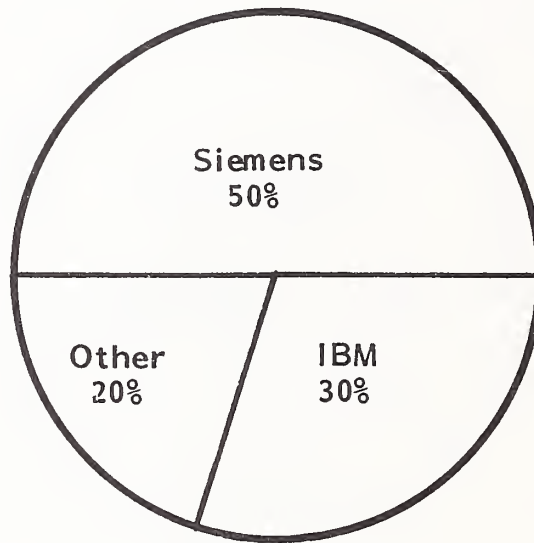
WORD PROCESSORS

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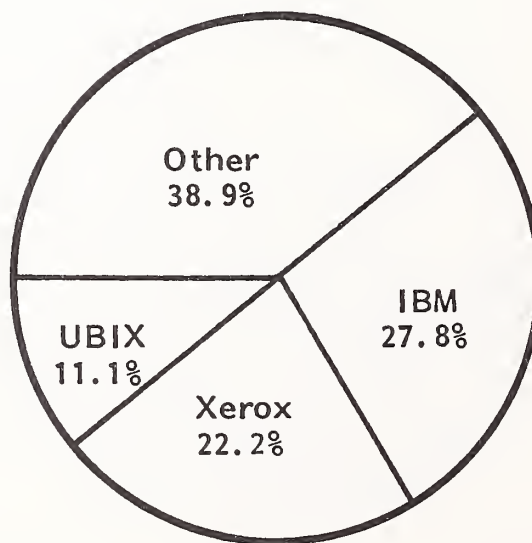
SOURCE: User Survey

EXHIBIT B-2 (Cont.)

GERMAN USERS' INSTALLED EQUIPMENT
(Percent Using)



PBAX



COPIERS

Continued

SOURCE: User Survey

GERMAN USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981
All Systems 1983	7.6	-	-	7.9	-	-	7.3	-	-	7.5	-	-	6.5	-	-
Large Systems	7.6	8.0	6.6	8.1	8.3	7.0	7.4	5.8	5.6	7.4	6.2	4.6	6.6	-	-
Small Systems	7.8	7.3	5.2	7.6	7.3	5.6	7.0	6.7	6.7	7.2	6.2	5.4	6.6	-	-
Peripherals and Terminals	7.4	7.7	6.2	8.0	7.8	5.6	7.3	6.5	6.6	7.6	7.8	6.4	6.2	-	-
Datacommunications	7.7	-	-	8.4	-	-	7.9	-	-	7.8	-	-	7.1	-	-
Personal Computers	9.0	-	-	9.0	-	-	9.0	-	-	10.0	-	-	8.0	-	-
Word Processors	7.5	8.0	5.4	7.9	8.0	6.6	7.8	-	6.4	8.0	6.0	4.6	7.2	-	-
Copiers	7.3	-	-	6.5	-	-	6.6	-	-	7.0	-	-	-	-	-
PBX	7.9	-	-	8.1	-	-	6.8	-	-	7.4	-	-	6.0	-	-
Systems Software	7.6	6.2	7.0	7.8	6.7	6.0	7.0	6.9	6.0	-	-	-	6.5	-	-
Applications Software	6.5	5.2	3.8	7.3	5.4	3.0	7.6	4.5	6.0	7.7	-	-	6.2	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey
Continued

EXHIBIT B-3 (Cont.)

GERMAN USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			QUALITY OF MARKETING & SALES/PEOPLE			PRODUCT RELIABILITY		
	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981
All Systems 1983	6.6	-	-	5.6	-	-	7.0	-	-	5.9	-	-	6.7	-	-	7.8	-	-
Large Systems	6.8	-	-	5.9	-	4.4	7.1	7.2	7.6	5.7	6.3	4.8	6.6	-	-	7.8	-	-
Small Systems	6.6	-	-	5.5	7.0	2.6	6.8	7.7	4.8	6.3	6.6	4.2	6.5	-	-	8.1	-	-
Peripherals and Terminals	6.8	-	-	5.7	7.6	-	7.0	6.5	6.0	6.0	6.6	5.6	6.7	-	-	7.6	-	-
Datacommunications	6.2	-	-	6.5	-	-	7.8	-	-	5.8	-	-	7.1	-	-	7.9	-	-
Personal Computers	8.0	-	-	-	-	-	8.0	-	-	-	-	-	8.0	-	-	-	-	-
Word Processors	6.3	-	-	6.7	-	-	7.8	5.0	5.6	6.4	6.0	5.2	6.7	-	-	-	-	-
Copiers	4.7	-	-	5.2	-	-	6.4	-	-	4.4	-	-	7.5	-	-	6.2	-	-
PBX	7.3	-	-	4.8	-	-	4.8	-	-	5.8	-	-	6.1	-	-	-	-	-
Systems Software	5.9	-	-	4.9	3.6	-	6.9	5.6	6.4	5.9	5.6	6.2	7.0	-	-	8.2	-	-
Applications Software	3.8	-	-	4.2	7.0	-	7.0	6.2	5.0	5.1	5.0	4.0	5.7	-	-	6.6	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

GERMAN USERS' RATING OF IMPORTANCE OF MAINTENANCE ISSUES

SERVICE ISSUES	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems In Germany		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	1983	1982	1981	
Systems Availability	9.7	9.2	9.3	9.7	4.3	8.1	9.3	8.7	10.0	9.4	9.4	9.8	9.2	
Response Time	9.5	8.5	9.1	9.6	6.5	8.1	9.8	8.6	9.5	9.4	9.4	8.7	9.6	
Repair Time	9.1	8.5	8.9	9.6	6.5	8.1	10.0	8.8	9.4	9.4	9.4	8.3	9.2	
Equipment Reliability	9.3	9.3	9.2	8.9	4.3	8.1	9.3	7.5	9.6	9.4	9.4	9.7	9.2	
Software Maintenance	8.0	7.1	7.3	8.6	4.3	7.3	6.5	-	8.8	8.9	8.9	8.9	5.9	
Price of Maintenance	7.5	7.8	7.6	7.3	5.3	7.9	7.8	8.5	8.6	8.7	8.7	7.7	5.6	
Preventive Maintenance	6.8	5.5	5.6	6.1	3.0	4.6	5.9	7.9	5.3	7.0	7.0	6.7	6.6	
Having Same Engineer Each Call	5.8	6.0	4.6	5.1	1.0	6.7	5.3	5.1	6.0	5.3	5.3	N/A	N/A	
Remote Diagnostics	5.3	3.8	3.8	5.0	1.0	3.3	4.0	-	4.9	3.6	3.6	4.6	5.9	
Uptime Guarantees	6.3	5.0	5.4	7.0	2.3	5.9	6.5	3.6	5.7	5.3	5.3	7.2	6.6	
Having a Choice for Service	5.1	4.8	4.1	4.7	3.0	5.4	2.7	3.5	5.0	5.2	5.2	4.7	N/A	

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

- Repair time - large systems, datacommunications, PBAX, and systems and applications software.
- Reliability - large systems, small systems, peripherals and terminals, PBAX, and systems and applications software.

● For all systems the average user response to service issues for 1983 is:

- Viewed as most important:

- Availability.
- Response time.
- Repair time.
- Reliability.

- Viewed as important:

- Software maintenance.

SYSTEMS			
Large systems	Small systems	Peripherals and terminals	COBOL
7.0	5.0	3.0	3.0
2.2	2.0	1.0	0.8
1.0	2.0	0.8	0.8
3.0	3.0	1.0	0.0
8.0	1.0	1.0	1.0
7.0	0.8	0.7	0.7
0.0	0.2	0.0	0.0
2.0	0.0	0.0	0.0
3.0	3.0	0.0	0.0
0.0	0.0	0.0	0.0
1.0	0.0	0.0	0.0
4.0	0.0	0.0	0.0

- Viewed as least important:

- Having a choice for service.

- Remote diagnostics.

- Having the same engineer take each call.

- Preventive maintenance.

- Uptime guarantees.

1983 USER RESPONSE

EX

- System availability, as shown in Exhibit B-5, is viewed as good because the percent availability exceeds 95% in most cases. A personal computer availability of less than 80% is a problem. Perceived actual performance exceeds the threshold of pain but falls short of the ideal standard.
- Response and repair times are shown in Exhibits B-6 and B-7 respectively. In general these service elements are perceived as quite acceptable.

D. DESIRE FOR DIFFERENT CONTRACTS, WILLINGNESS TO AID SERVICER, AND WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICES

- German users show an emphatic rejection of annual invoicing and are only slightly desirous of using different contracts, as shown in Exhibit B-8.
- Exhibit B-9 indicates a strong reluctance of German users to participate in service even if a discount is provided.
- Likewise, there is a strong reluctance to pay for extra or improved services, according to Exhibit B-10.

E. PRICING

- German users receive price increases that are reasonably close to inflation and are very close to ideal targets, as shown in Exhibit B-11.
- Prices generally are considered to be too high, especially for word processors, according to Exhibit B-12.

EXHIBIT B-5
GERMAN RESPONDENTS' VIEW OF SYSTEM AVAILABILITY
(percent)

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
<u>1983</u>												
Currently Receive	96.0%	95.0%	94.6%	95.8%	78.3%	96.2%	92.6%	80.6%	97.3%	97.1	95.1%	
Ideally Would Like	98.6	96.6	98.6	99.6	80.0	98.3	94.3	86.5	98.6	98.9	97.7	
TOP*	93.0	87.9	91.3	92.8	66.3	90.6	89.8	67.5	130.8	94.3	94.4	
<u>1982</u>												
Received	96.7	92.2	92.0	N/A	N/A	90.0	N/A	N/A	97.0	94.5	-	
Ideally Would Have Liked	96.8	98.1	97.4	N/A	N/A	95.0	N/A	N/A	99.5	96.0	-	
TOP*	96.1	91.6	90.6	N/A	N/A	95.0	N/A	N/A	97.1	93.9	-	
<u>1981</u>												
Received	96.2	98.1	97.8	N/A	N/A	93.8	N/A	N/A	96.8	97.0	-	
Ideally Would Have Liked	99.2	99.6	99.2	N/A	N/A	98.1	N/A	N/A	99.2	99.5	-	
TOP*	95.2	96.2	96.1	N/A	N/A	96.3	N/A	N/A	97.2	97.1	-	

* TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Surveys

EXHIBIT B-6

GERMAN RESPONDENTS' VIEW OF RESPONSE TIME (Hours)

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
<u>1983</u>												
Currently Get	2.3	5.4	3.3	5.1	8.3	9.8	2.5	3.0	3.3	9.6	4.0	
Ideal	1.1	2.2	1.8	2.1	2.3	1.8	1.0	1.4	1.7	2.1	1.7	
TOP*	3.5	7.5	6.2	6.1	12.7	19.7	2.0	4.8	7.2	6.0	6.1	

*TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Surveys

EXHIBIT B-7
GERMAN RESPONDENTS' VIEW OF REPAIR TIME
(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Get	2.6	2.9	2.0	5.4	4.3	2.7	7.5	47.8	3.1	7.1	3.1
Ideal	1.7	2.4	1.5	2.6	1.5	1.3	7.0	1.1	2.7	1.7	2.2
TOP*	5.0	7.1	5.5	7.7	5.8	7.6	12.1	12.4	7.4	5.6	6.4

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Surveys

EXHIBIT B-8

GERMAN USERS' DESIRE FOR DIFFERENT CONTRACTS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Long-Term Contract	5.5	3.6	5.2	5.3	7.0	5.3	4.2	5.8	6.5	5.0	5.0	
Automatic Renewal	5.3	4.8	6.0	7.4	7.0	5.5	4.2	3.4	5.0	6.0	5.4	
Annual Invoicing	2.0	2.4	2.1	1.9	1.0	4.0	2.0	2.8	2.6	3.0	2.2	
More Flexibility	6.6	6.5	6.7	6.0	10.0	6.0	5.0	4.4	6.5	5.0	6.5	
Bundling*	6.0	5.8	6.3	7.3	7.0	5.5	4.6	4.8	6.1	5.0	6.0	

Rating: 1 = Less Desirable, 10 = Very Desirable

*1 = Bundled, 10 = Unbundled

SOURCE: INPUT Survey

EXHIBIT B-9

GERMAN USERS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT

HELP TO VENDOR	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Helping to Diagnose	2.0	2.0	2.2	2.0	1.7	1.5	1.6	1.6	1.7	1.7	2.0
Helping Replace Boards	1.8	1.9	1.9	1.9	1.5	1.5	1.4	1.3	-	-	1.8
Helping to Patch Software	1.9	1.9	2.0	1.9	1.7	1.5	1.4	-	1.6	1.7	1.8
Delivering Portable Machines to Repair Centres	1.3	1.6	1.4	1.1	1.7	1.5	1.1	-	-	-	1.4

Rating: 1 = Unwilling, 10 = Willing

SOURCE: INPUT Survey

EXHIBIT B-10

GERMAN USERS' WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Guaranteed Uptime	1.5	1.3	1.8	1.4	1.0	1.3	1.2	1.1	1.4	1.4	1.5
Guaranteed Response Time	1.9	1.7	1.6	2.2	1.3	1.4	1.3	1.1	1.7	1.6	1.7
Guaranteed Turnaround Time on Software	1.7	1.4	1.5	1.4	1.0	1.0	1.0	-	1.7	1.7	1.5
Software Consulting From Servicer	1.7	1.6	1.3	1.9	2.0	1.0	1.0	-	1.5	1.3	1.5
Software Enhancements From Servicer	1.5	1.5	1.3	1.3	2.0	2.3	1.0	-	1.5	1.2	1.5
Personalised Service	1.8	1.6	1.6	1.3	2.0	2.0	2.0	1.1	1.7	1.4	1.7

Rating: 1 = None, 2 = Up to 1% Basic Charge, 3 = Up to 5%, 4 = 10%, 5 = 15%

SOURCE: INPUT Survey

EXHIBIT B-11
GERMAN RESPONDENTS' VIEW OF MAINTENANCE PRICING
(percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Received 1982	5.8%	5.5%	6.1%	5.1%	3.8%	3.8%	6.4%	6.6%	3.0%	2.2%	5.2%
Expected 1983	4.6	3.9	5.1	3.8	12.8	4.3	4.5	4.0	3.2	2.0	4.4
TOP* 1983	8.4	7.0	9.4	6.3	6.7	9.3	6.4	8.2	7.0	7.8	8.0
<u>1982</u>											
Received 1981	3.4	6.0	6.5	N/A	N/A	N/A	N/A	N/A	8.5	N/A	-
Expected 1982	4.4	5.0	4.6	N/A	N/A	N/A	N/A	N/A	6.0	N/A	-
TOP* 1982	9.3	7.6	9.1	N/A	N/A	N/A	N/A	N/A	6.0	N/A	-
<u>1981</u>											
Received 1980	5.4	5.1	5.2	N/A	N/A	4.8	N/A	N/A	5.3	7.1	-
Expected 1981	4.2	5.2	5.5	N/A	N/A	N/A	N/A	N/A	4.8	5.4	-
TOP* 1981	6.4	7.8	7.0	N/A	N/A	6.5	N/A	N/A	8.1	7.0	-

*TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Surveys

EXHIBIT B-12

GERMAN RESPONDENTS' VIEW OF MAINTENANCE PRICING TERMS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Germany
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Current Contract Prices:1	8.2	7.7	8.0	7.7	7.5	7.9	5.1	8.7	8.0	8.1	7.9	
Current Hourly Rates:	9.1	8.3	8.4	7.8	8.3	10.0	6.1	8.7	8.1	9.3	8.5	
Extra Shift = 10, Rates: $w = 1$	8.0	7.8	8.0	7.4	8.8	10.0	7.9	9.6	7.1	9.2	8.0	
Software Support Rates:	9.2	7.7	9.1	-	8.8	10.0	6.5	-	8.3	9.3	8.7	

Rating: 1 = Too Low, 10 = Too High

F. ATTITUDES AND DEMOGRAPHICS

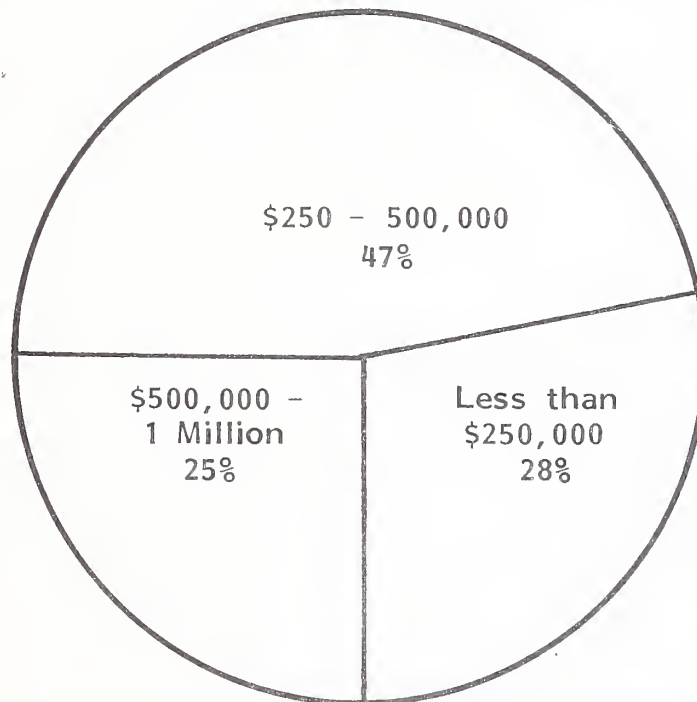
- Exhibit B-13 depicts West German users' demographics and their attitudes towards service.
 - German users are basically contented with service; however, there are complaints about response, cost of service, and lack of capability.

When asked about possible service improvements, 75% of German users replied "none."
- Typically, German users:
 - Don't like preventive maintenance.
 - Don't receive discounts on service contracts.
 - Regard remote diagnostics positively.
 - Are satisfied with service and consequently don't want TPM.
- German user respondents typically are manufacturing companies that employ more than 500 and have \$250,000 to \$500,000 in their annual information systems budgets.

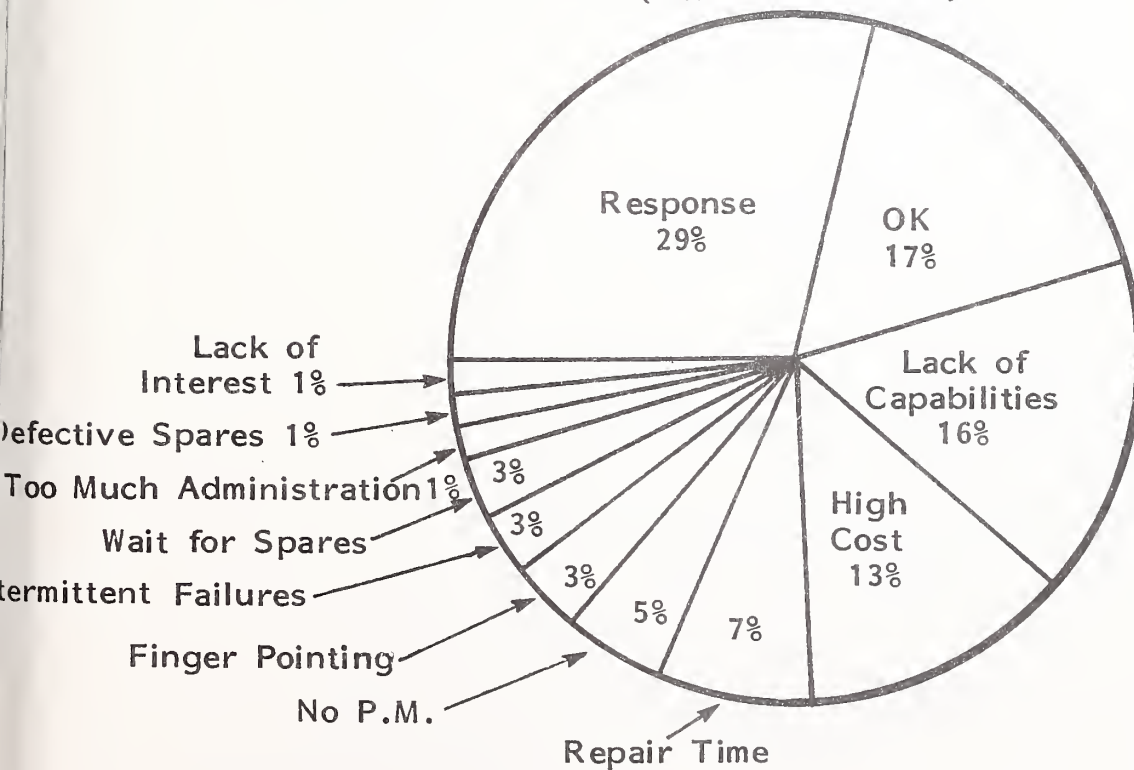
EXHIBIT B-13

DEMOGRAPHICS IN GERMANY

USER RESPONDENTS' 1983 INFORMATION SYSTEMS BUDGETS
(Percent Mentions)



USER PERCEPTION OF WORST FEATURES OF MAINTENANCE
(Percent Mentions)

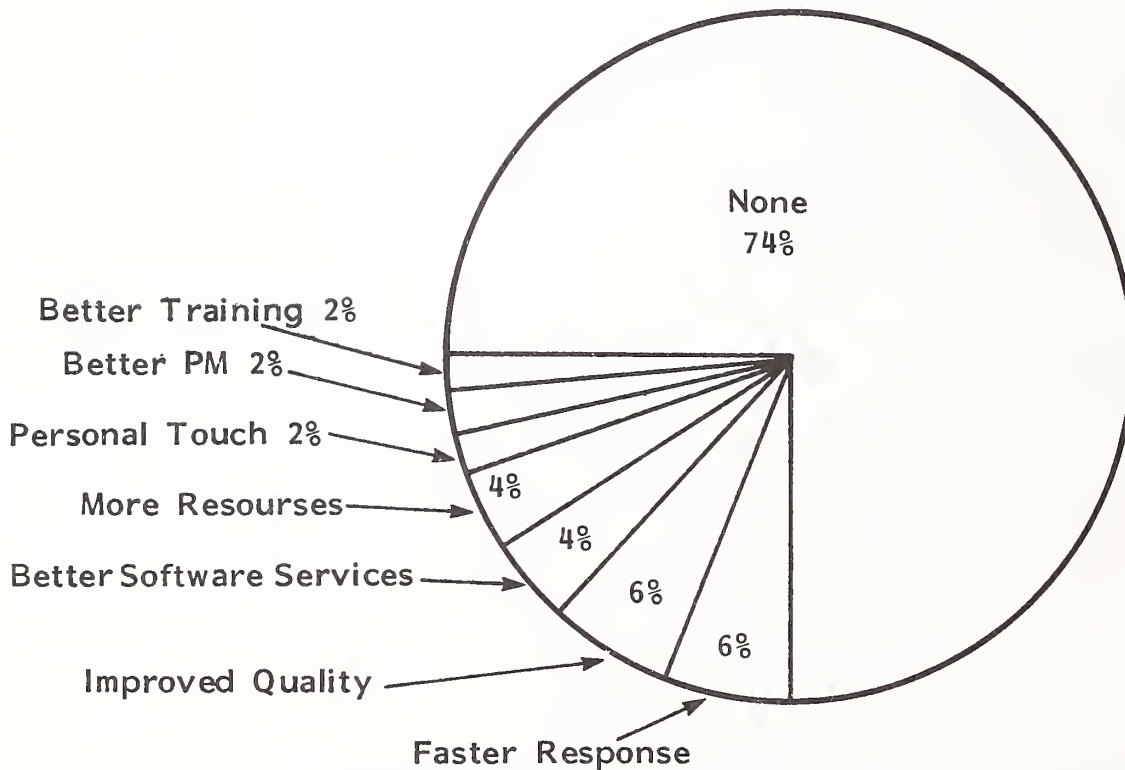


SOURCE: INPUT Survey
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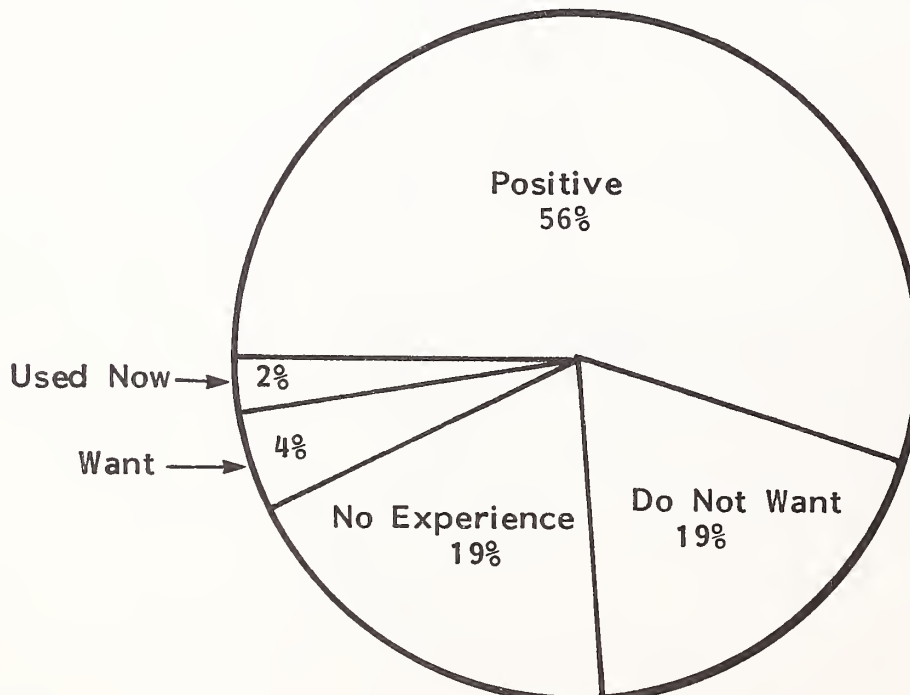
EXHIBIT B-13 (Cont.)

DEMOGRAPHICS IN GERMANY

USER SUGGESTIONS FOR SERVICE IMPROVEMENT
(Percent Mentions)



USER ATTITUDES TOWARD REMOTE DIAGNOSTICS
(Percent Mentions)

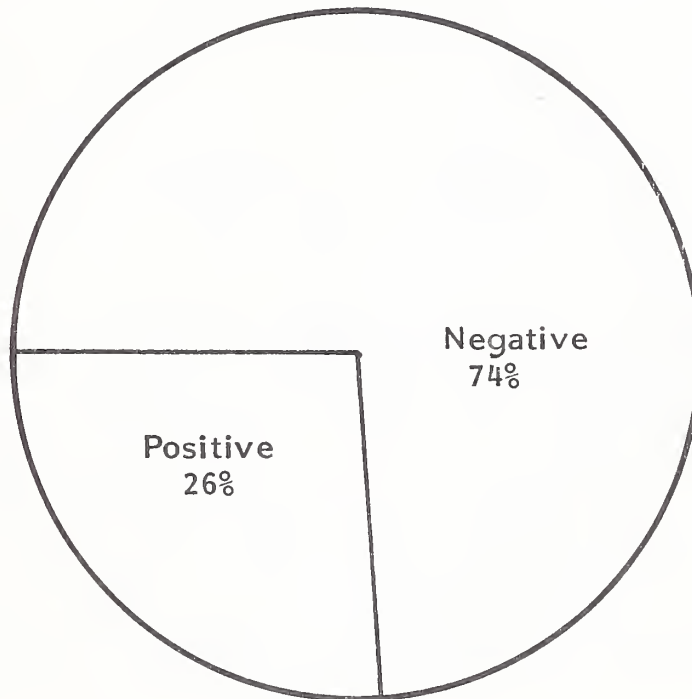


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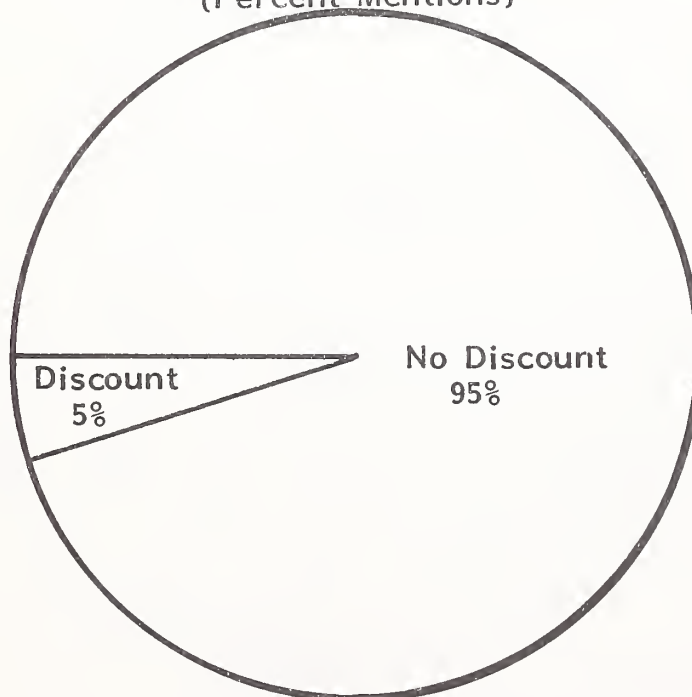
EXHIBIT B-13 (Cont.)

DEMOGRAPHICS IN GERMANY

USER ATTITUDES REGARDING PREVENTIVE MAINTENANCE
(Percent Mentions)



MAINTENANCE DISCOUNTS
(Percent Mentions)

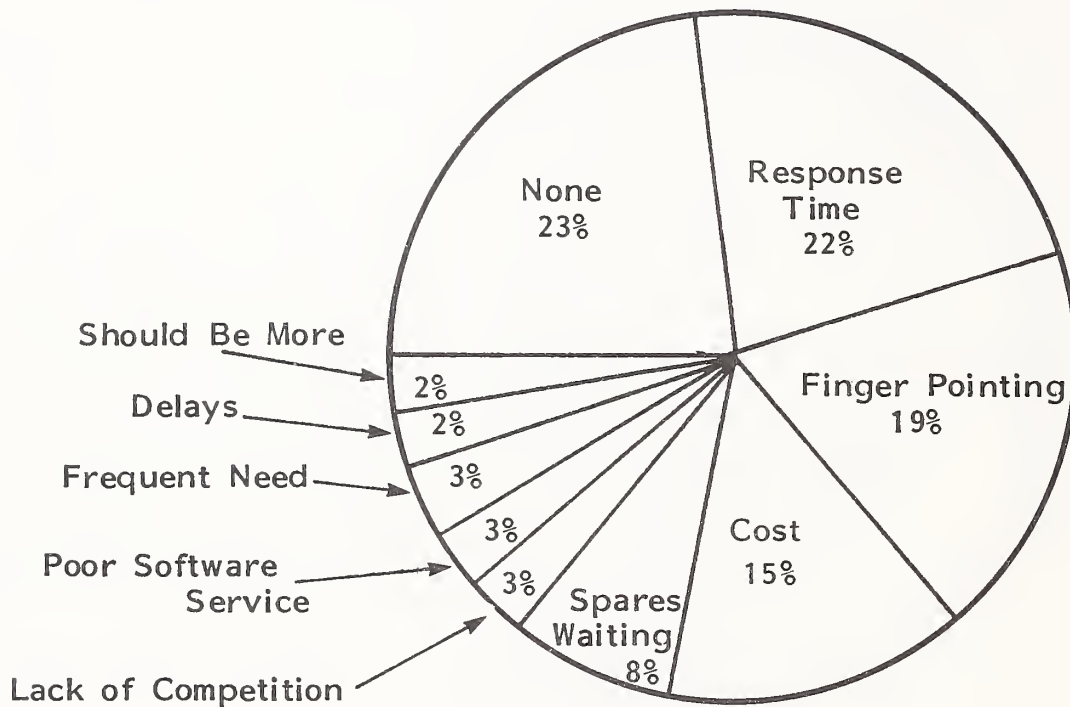


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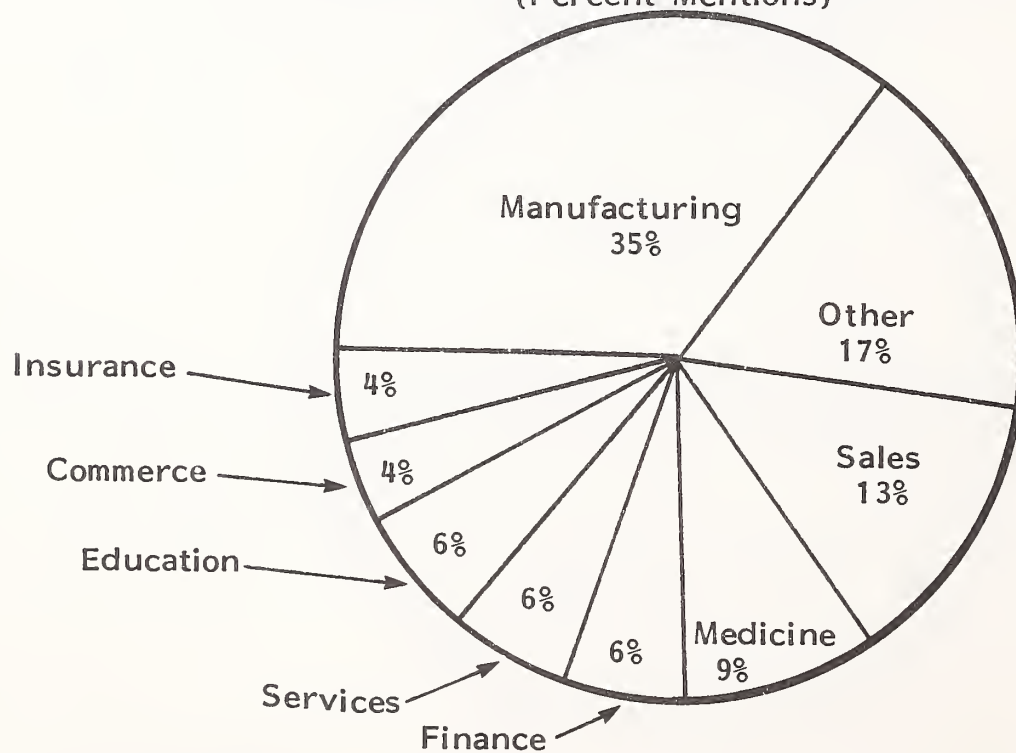
EXHIBIT B-13 (Cont.)

DEMOGRAPHICS IN GERMANY

USER COMPLAINTS ABOUT SERVICE
(Percent Mentions)



USER RESPONDENTS BY BUSINESS TYPE
(Percent Mentions)

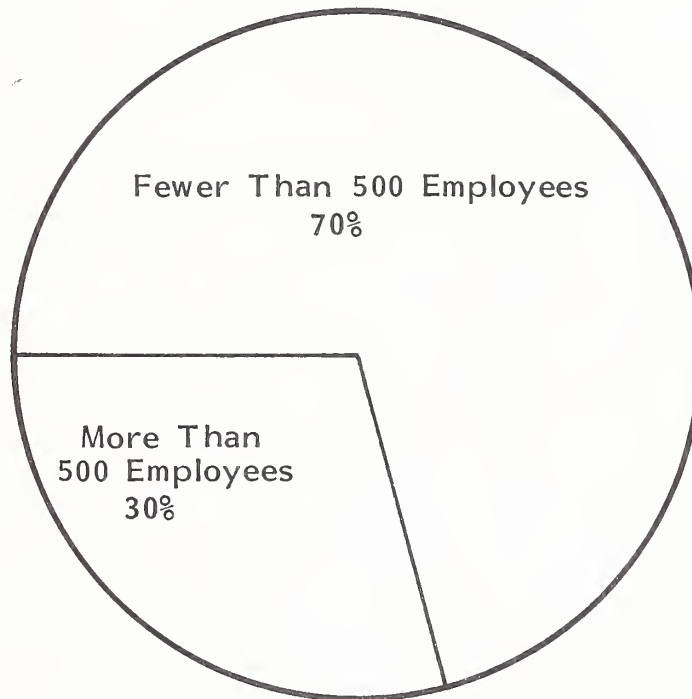


SOURCE: INPUT Survey
Continued

EXHIBIT B-13 (Cont.)

DEMOGRAPHICS IN GERMANY

USER RESPONDENTS BY SIZE OF COMPANY
(Percent Mentions)



SOURCE: INPUT Survey
Continued

APPENDIX C: FRENCH USER DATABASE

APPENDIX C: FRENCH USER DATABASE

A. COMMENTARY

- As perceived by French users, response times provided by service vendors are very poor and undoubtedly the cause for deteriorating performance in systems availability.
- Prices for maintenance are nearly at the threshold of pain. This, coupled with an increasing awareness and acceptance of TPM, could present existing service vendors with even more problems.
- Despite these comments, French users claim that they are reasonably satisfied with the service they receive.
- Opportunities exist for French service vendors to exploit users' desire for different contracts and users' willingness to help provide service.

B. QUALITY OF SERVICE

1. VENDOR RATINGS BY USER

- Exhibit C-1 summarises the users' relative rankings of service vendors in terms of overall quality.
 - IBM has a strong reputation in each of the product categories.
 - CII Honeywell Bull, the only large, active manufacturer, is ranked lower than IBM but still well above average.
- Exhibit C-2 is representative of equipment installed at respondent users' sites rather than marketshare.

2. QUALITY ATTRIBUTES AND QUALITY BY PRODUCT

- Exhibit C-3 shows user ratings of quality attributes. Subpar ratings include:
 - Remote diagnostics - large systems, peripherals and terminals, personal computers.
 - Preventive maintenance effectiveness - personal computers.
 - Quality of information and communication - personal computers.

C. SERVICE ISSUES, AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

- Importance of maintenance issues to users is shown in Exhibit C-4. Most important are:

FRENCH USER RANKING OF OVERALL VENDOR QUALITY

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATA COM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Apple	-	-	-	-	5.5	-	-	-	-
Olivetti	-	-	-	-	-	7.0	-	-	-
Burroughs	7.1	7.3	7.3	-	-	-	-	-	7.6
DEC	9.0	7.5	9.0	-	-	-	-	-	7.0
CII HB	7.4	6.1	5.7	7.0	-	-	-	-	6.1
Hewlett- Packard	-	8.8	9.0	-	-	-	-	-	8.0
IBM	8.1	8.6	8.2	8.6	-	8.3	8.0	7.0	7.5
ICL	7.6	5.5	6.0	-	-	-	-	-	5.3
NCR	8.0	7.2	7.8	8.0	-	-	-	-	8.0
Philips	-	7.0	-	-	-	-	-	-	-
Sperry Univac	13.2	-	6.6	4.0	-	-	-	-	4.5

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey
Continued

EXHIBIT C-1 (Cont.)

FRENCH USER RANKING OF OVERALL VENDOR QUALITY

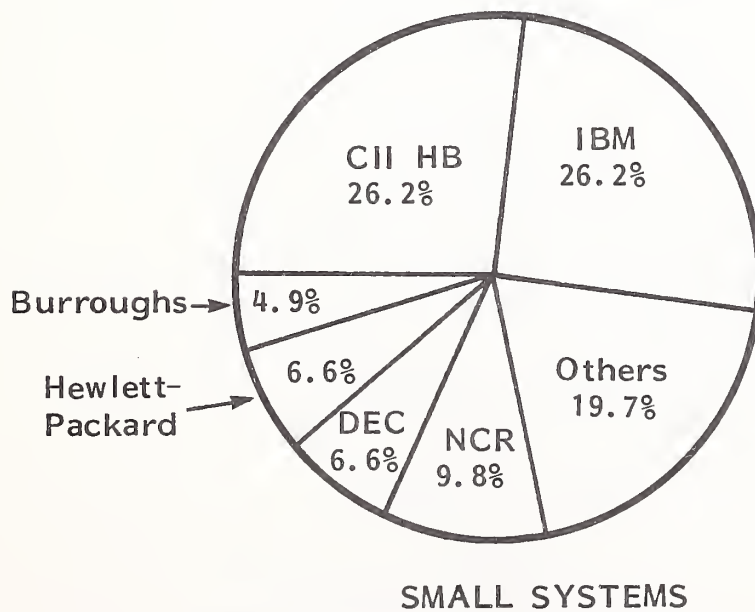
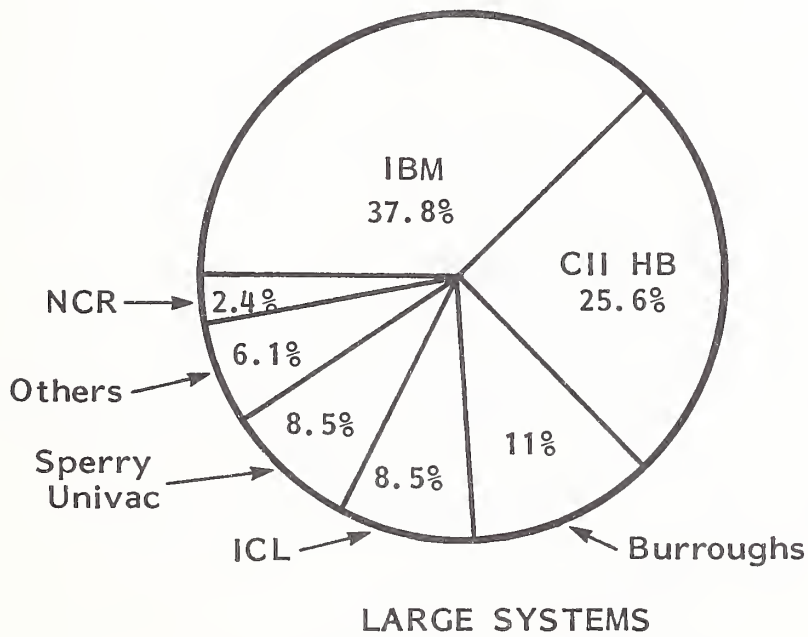
VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATACOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Nixdorf	-	8.5	7.0	-	-	-	-	-	-
NAS	8.0	-	-	-	-	-	-	-	-
STC	-	-	7.0	-	-	-	-	-	-
ITT	-	-	7.0	-	-	-	-	-	-
Memorex	-	-	7.5	-	-	-	-	-	-
Ericsson	-	-	7.0	-	-	-	-	-	-
CDC	-	-	7.0	-	-	-	-	-	-
CGCT	-	-	-	8.0	-	-	-	-	-
SAT	-	-	-	8.2	-	-	-	-	-
TRT	-	-	-	7.5	-	-	-	-	-
CPT	-	-	-	7.8	-	-	-	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey

EXHIBIT C-2

FRENCH USERS' INSTALLED EQUIPMENT
(Percent Using)

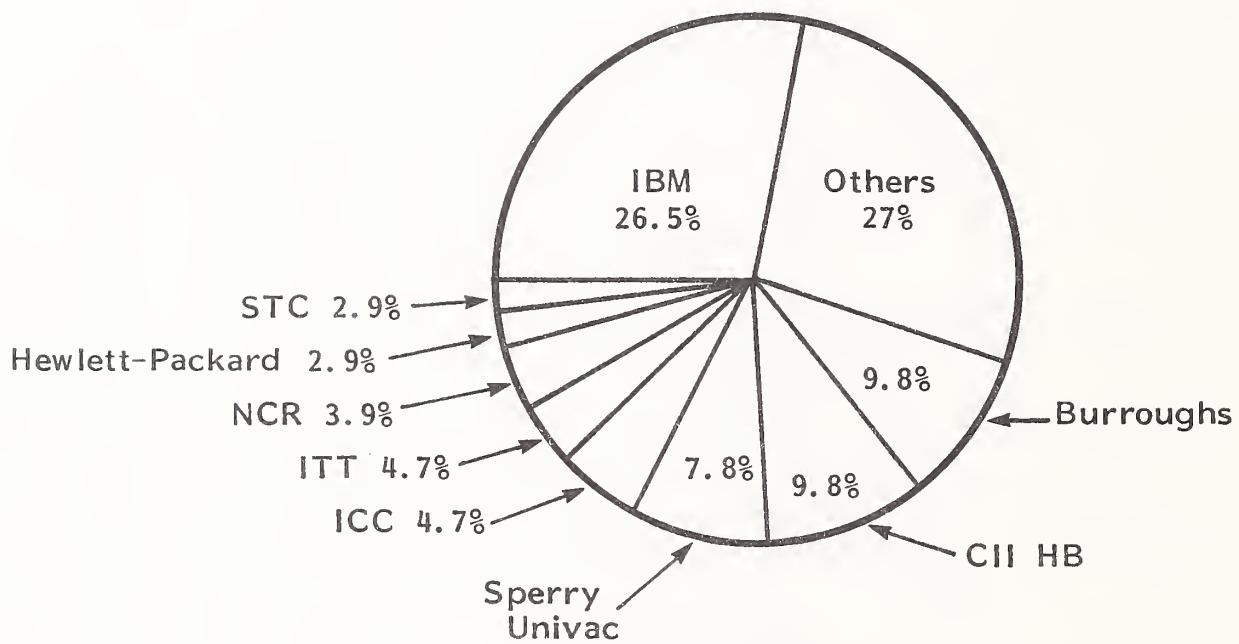


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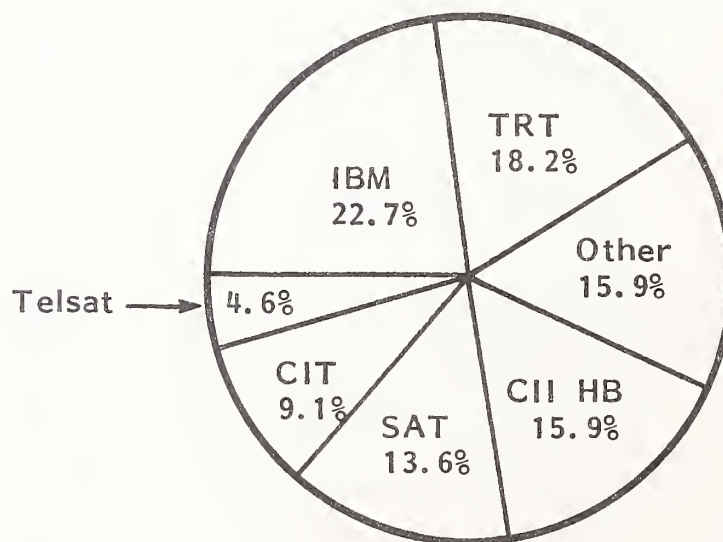
SOURCE: User Survey

EXHIBIT C-2 (Cont.)

FRENCH USERS' INSTALLED EQUIPMENT
(Percent Using)



PERIPHERALS AND TERMINALS



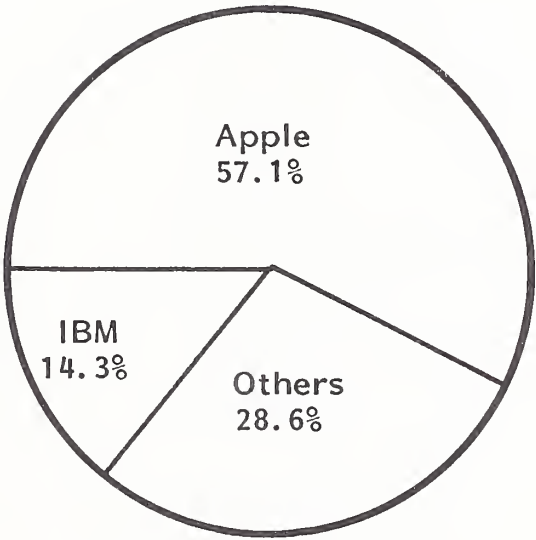
DATA COMMUNICATIONS

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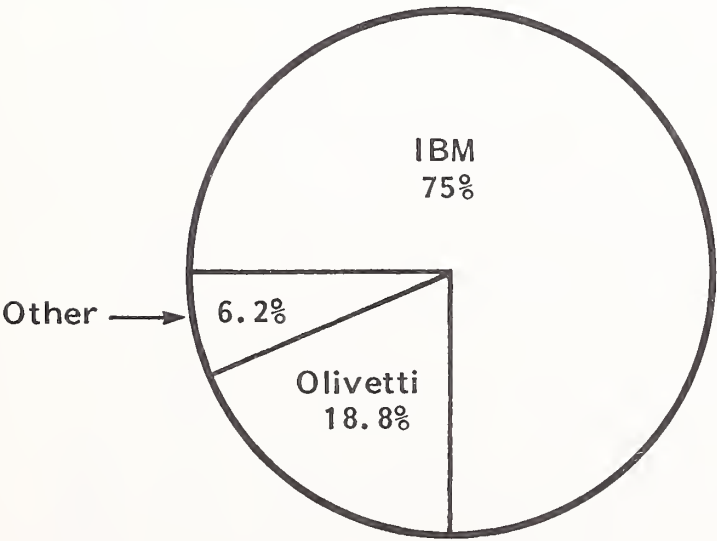
SOURCE: User Survey

EXHIBIT C-2 (Cont.)

FRENCH USERS' INSTALLED EQUIPMENT
(Percent Using)



MICROCOMPUTERS



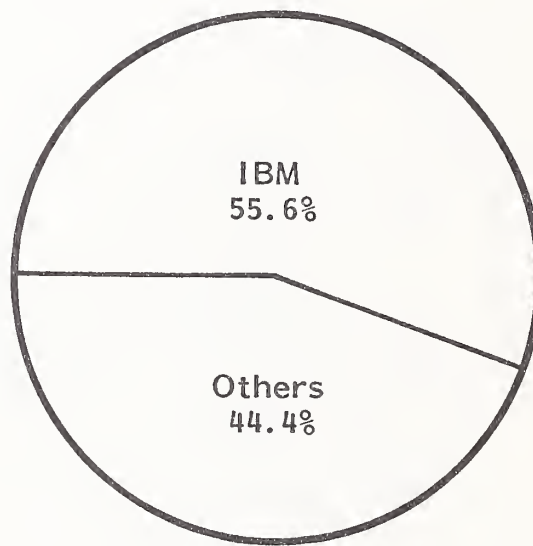
WORD PROCESSORS

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SOURCE: User Survey

EXHIBIT C-2 (Cont.)

FRENCH USERS' INSTALLED EQUIPMENT
(Percent Using)



COPIERS

SOURCE: User Survey

FRENCH USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981
All Systems 1983	7.7	-	-	8.0	-	-	7.0	-	-	7.4	-	-	6.1	-	-
Large Systems	7.6	7.4	6.2	7.9	7.8	7.4	6.9	7.0	6.8	6.7	6.2	6.0	6.2	-	-
Small Systems	7.4	8.7	5.8	7.4	9.0	6.4	6.9	8.7	6.8	7.2	8.7	5.4	6.1	-	-
Peripherals and Terminals	7.5	6.6	6.6	7.7	7.0	7.6	7.1	5.8	5.8	7.0	5.6	6.0	5.8	-	-
Datacommunications	7.7	-	-	8.0	-	-	7.0	-	-	7.4	-	-	6.0	-	-
Personal Computers	5.5	-	-	5.5	-	-	5.0	-	-	5.3	-	-	5.7	-	-
Word Processors	8.1	7.0	6.4	7.9	7.0	6.0	7.4	7.0	6.2	7.6	7.0	7.2	6.5	-	-
Copiers	7.0	-	-	7.8	-	-	6.8	-	-	6.8	-	-	-	-	-
PBX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Systems Software	9.4	6.3	5.8	9.4	6.2	5.8	7.2	5.6	5.4	-	-	-	6.2	-	-
Applications Software	6.0	6.8	4.4	7.3	6.8	4.0	6.9	4.8	5.6	-	-	-	6.1	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey
Continued

EXHIBIT C-3 (Cont.)

FRENCH USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			QUALITY OF MARKETING & SALESPEOPLE			PRODUCT RELIABILITY		
	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981	1983	1982	1981
All Systems 1983	6.0	-	-	5.5	-	-	6.5	-	-	6.3	-	-	6.6	-	-	7.7	-	-
Large Systems	5.6	-	-	4.1	7.0	5.0	6.2	6.2	5.6	5.9	6.2	6.2	6.0	-	-	8.1	-	-
Small Systems	5.3	-	-	5.3	-	5.0	6.3	8.3	6.0	5.9	7.3	5.6	6.2	-	-	7.5	-	-
Peripherals and Terminals	5.9	-	-	4.6	-	6.4	6.2	5.7	6.0	6.0	5.5	6.2	6.4	-	-	7.8	-	-
Datacommunications	5.8	-	-	5.6	-	-	7.1	-	-	7.0	-	-	7.0	-	-	8.3	-	-
Personal Computers	3.0	-	-	1.0	-	-	4.0	-	-	6.3	-	-	5.3	-	-	7.0	-	-
Word Processors	5.9	-	-	5.3	-	-	6.4	6.0	6.6	6.5	5.0	6.4	5.5	-	-	8.3	-	-
Copiers	6.5	-	-	7.0	-	-	6.3	-	-	5.6	-	-	6.6	-	-	6.0	-	-
PBX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Systems Software	-	-	-	9.1	5.7	-	7.3	6.0	6.4	7.8	5.6	5.6	8.9	-	-	7.1	-	-
Applications Software	6.3	-	-	6.0	5.5	-	6.1	7.0	6.0	6.3	6.0	4.8	6.3	-	-	6.7	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

FRENCH USERS' RATING OF IMPORTANCE OF MAINTENANCE ISSUES

SERVICE ISSUES	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems In France		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	1983	1982	1981
Systems Availability	8	8	8	8	6	8	-	9	-	8	9	8.8	9.2
Response Time	8	8	7	8	6	7	-	9	-	9	8	7.8	8.3
Repair Time	7	7	7	8	7	7	-	9	-	9	8	8.1	6.9
Equipment Reliability	9	9	8	9	8	9	-	9	-	9	9	9.1	9.2
Software Maintenance	8	7	8	6	7	8	-	-	-	9	8	7.6	6.9
Price of Maintenance	7	7	7	7	6	7	-	9	7	6	7	7.2	8.9
Preventive Maintenance	5	6	6	6	3	6	-	8	-	6	6	4.4	6.6
Having Same Engineer Each Call	7	7	7	5	4	8	-	7	9	7	7	N/A	N/A
Remote Diagnostics	5	6	5	6	2	4	-	-	-	6	6	4.8	5.0
Uptime Guarantees	7	7	7	7	4	7	-	7	10	7	7	7.5	6.9
Having a Choice for Service	5	7	6	5	7	6	-	5	-	3	-	N/A	N/A

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

- Response time - applications software.
 - Reliability - large systems, small systems, datacommunications, word processors, and applications software.
 - Software maintenance - applications software.
 - Having same engineer each call - systems software.
- For all systems the average user response to service issues for 1983 is:
 - Viewed as most important:
 - Systems availability.
 - Equipment reliability.
 - Viewed as important:
 - Response time.
 - Repair time.
 - Software maintenance.
 - Price of maintenance.
 - Uptime guarantees.
 - Viewed as least important:
 - Preventive maintenance.
 - Remote diagnostics.

- System availability, as shown in Exhibit C-5, is marginally better than the threshold of pain but is significantly short of the ideal. Users have generally relaxed their performance requirements since 1981 because, with more products, (large and small systems, etc.), there is less critical need for high performance in a single type of system.
- Exhibits C-6 and C-7 show respectively response time and repair time. Response times seem inordinately long, but users must have been conditioned to this since perceived actual response remains outside the threshold of pain. Repair times are more in line with industry standards than response times.

D. DESIRE FOR DIFFERENT CONTRACTS, WILLINGNESS TO AID SERVICER, AND WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICES

- French users show an extraordinary interest in having different contracts. The most popular choice is to have more flexibility in service contracts, followed in preference by an automatic renewal feature, long term contracts, and bundled contracts. Annual invoicing is least wanted, as shown in Exhibit C-8.
- Exhibit C-9 indicates a strong user willingness to assist the service vendor in helping to diagnose faults, replace boards, and patch software. Personal computer users are reasonably willing to carry in faulty units to repair centres.
- French users are not overly enthusiastic about paying premiums for additional or improved services. Details are shown in Exhibit C-10.

EXHIBIT C-5
FRENCH RESPONDENTS' VIEW OF SYSTEM AVAILABILITY
(Percent)

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
<u>1983</u>												
Currently Receive	92.0	88.0	85.0	86.0	82.0	82.0	-	85.0	N/A	-	88.0	
Ideally Would Like	95.0	94.0	97.0	94.0	89.0	98.0	-	100.0	N/A	-	98.0	
TOP*	86.0	81.0	85.0	76.0	76.0	83.0	-	50.0	86.0	-	83.0	
<u>1982</u>												
Received	97.0	96.1	83.8	N/A	N/A	91.3	-	N/A	95.5	96.0	-	
Ideally Would Have Liked	99.4	98.3	88.0	N/A	N/A	96.3	-	N/A	98.7	98.7	-	
TOP*	96.6	85.2	83.4	N/A	N/A	95.3	-	N/A	95.6	97.7	-	
<u>1981</u>												
Received	95.1	97.2	93.4	N/A	N/A	95.6	-	N/A	90.8	93.8	-	
Ideally Would Have Liked	98.8	99.1	98.4	N/A	N/A	99.0	-	N/A	98.8	99.0	-	
TOP*	94.2	95.7	95.0	N/A	N/A	96.0	-	N/A	95.0	96.0	-	

* TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Surveys

EXHIBIT C-6

FRENCH RESPONDENTS' VIEW OF RESPONSE TIME

(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
1983											
Currently Get	5	9	9	10	25	6	-	8	12	8	8
Ideal	3	3	3	3	3	2	-	2	7	12	3
TOP*	6	11	9	13	16	6	-	8	16	13	9

*TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT C-7
FRENCH RESPONDENTS' VIEW OF REPAIR TIME
(Hours)

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
<u>1983</u>												
Currently Get	2	3	2	2	5	1	-	1	13	2.0	3	
Ideal	2	2	1	2	5	1	-	3	11	0.4	2	
TOP*	4	4	4	3	5	4	-	7	9	2.0	4	

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT C-8

FRENCH USERS' DESIRE FOR DIFFERENT CONTRACTS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Other	Systems	Applications		
Long-Term Contract Automatic Renewal Annual Invoicing More Flexibility Bundling *	5	7	7	4	10	5	-	7	-	10	7	
	8	9	8	6	6	8	-	8	10	10	8	
	4	5	5	5	1	3	-	5	9	8	5	
	8	8	10	5	-	9	-	9	-	10	9	
	6	6	7	5	-	7	-	7	-	4	7	

Rating: 1 = Less Desirable, 10 = Very Desirable

* 1 = Bundled, 10 = Unbundled

SOURCE: INPUT Survey

EXHIBIT C-9

FRENCH USERS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT

HELP TO VENDOR	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Other	Systems	Applications		
Helping to Diagnose	9	9	9	7	10	9	-	9	11	6	9	
Helping Replace Boards	7	7	8	5	10	7	-	7	-	-	7	
Helping to Patch Software	7	8	7	5	7	7	-	7	9	7	7	
Delivering Portable Machines to Repair Centres	4	5	5	3	7	5	-	5	-	-	5	

Rating: 1 = Unwilling, 10 = Willing

SOURCE: INPUT Survey

EXHIBIT C-10

FRENCH USERS' WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	Copier Fax	Other	Systems	Applications	
Guaranteed Uptime	2	2	2	2	1	2	1	2	3	2	2
Guaranteed Response Time	2	2	2	2	2	2	1	2	3	2	2
Guaranteed Turnaround Time on Software	2	2	2	2	2	2	1	2	3	2	2
Software Consulting From Servicer	2	2	2	2	5	1	1	2	3	1	2
Software Enhancements From Servicer	2	2	2	2	2	1	-	2	3	4	2
Personalised Service	2	2	3	2	3	1	-	3	7	2	3

1 = None, 2 = Up to 1% basic charge, 3 = Up to 5%, 4 = 10%, 5 = 15%.

SOURCE: INPUT Survey

E. PRICING

- French users' view of pricing parameters is shown in Exhibits C-11 and C-12. The general message is that prices are too high.
- Perceived price increases are uncomfortably close to the threshold of pain.

F. ATTITUDES AND DEMOGRAPHICS

- Exhibit C-13 graphically describes French users' demographics and their attitudes about service.
 - Understandably, users are very concerned about response and the lack of capability in service organisations.
 - Degradation of system availability has been caused, in large measure, by increasingly poor response.
- Typically, French users:
 - Prefer having preventive maintenance.
 - Are satisfied with present maintenance vendors but show an increasing interest in TPM.
 - Receive no discounts for maintenance.
 - Are positive toward remote diagnostics.

EXHIBIT C-11

FRENCH RESPONDENTS' VIEW OF MAINTENANCE PRICING (Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Received 1982	8.0%	8.0%	7.0%	6.0%	-	7.0%	-	-	11.0%	6.0	9.0
Expected 1983	8.0	9.0	7.0	7.0	-	8.0	-	-	12.0	7.0	8.0
TOP* 1983	9.0	9.0	8.0	8.0	-	8.0	-	-	12.0	9.0	8.0
<u>1982</u>											
Received 1981	11.0	8.6	9.5	N/A	N/A	6.7	N/A	N/A	8.0	8.0	-
Expected 1982	10.2	9.2	10.0	N/A	N/A	10.7	N/A	N/A	6.5	8.0	-
TOP* 1982	12.0	13.9	13.0	N/A	N/A	9.0	N/A	N/A	14.5	10.0	-
<u>1981</u>											
Received 1980	10.5	11.8	10.6	N/A	N/A	7.4	N/A	N/A	9.3	11.3	-
Expected 1981	8.4	10.2	6.8	N/A	N/A	6.3	N/A	N/A	7.1	11.2	-
TOP* 1981	12.6	13.4	9.4	N/A	N/A	10.3	N/A	N/A	11.7	14.1	-

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT C-12

FRENCH RESPONDENTS' VIEW OF MAINTENANCE PRICING TERMS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in France
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Current Contract Prices:	8	8	8	7	8	8	-	-	-	9	8	
Current Hourly Rates:	9	8	8	8	-	-	-	-	-	8	9	
Extra Shift Rates:	9	8	9	8	-	-	-	-	-	10	9	
Software Support Rates:	8	9	9	7	5	-	-	-	-	9	-	

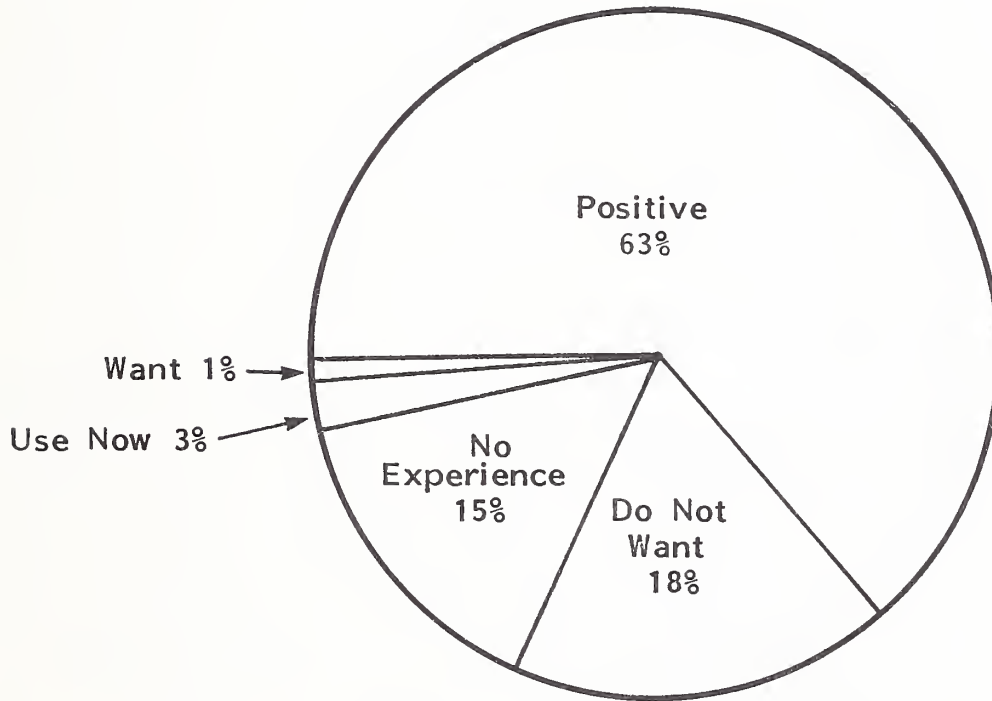
* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

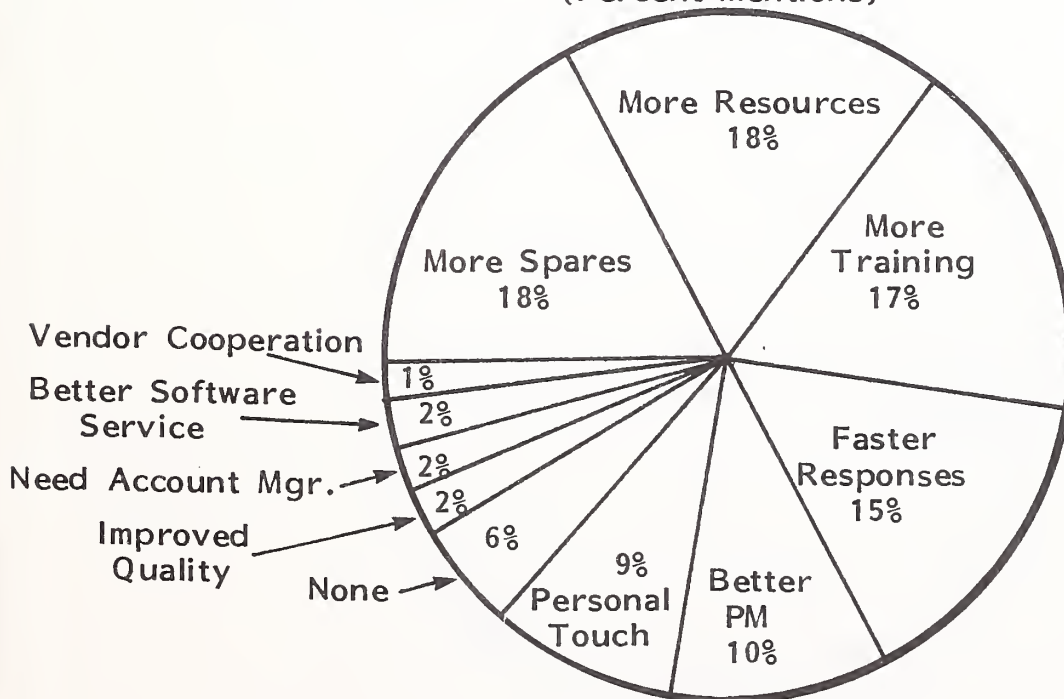
EXHIBIT C-13

DEMOGRAPHICS IN FRANCE

USER ATTITUDES TOWARDS REMOTE DIAGNOSTICS
(Percent Mentions)



USER SUGGESTIONS FOR SERVICE IMPROVEMENTS
(Percent Mentions)

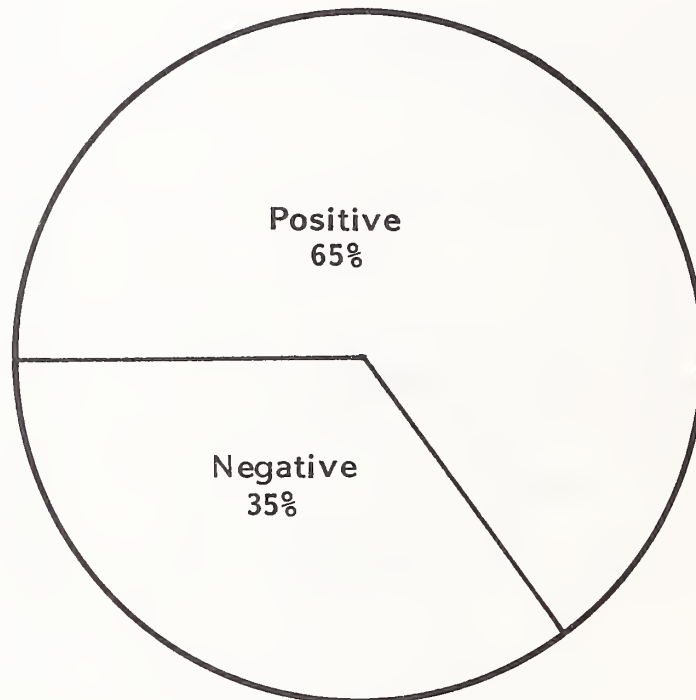


SOURCE: INPUT Survey
Continued

EXHIBIT C-13 (Cont.)

DEMOGRAPHICS IN FRANCE

USER ATTITUDES REGARDING PREVENTIVE MAINTENANCE
(Percent Mentions)



MAINTENANCE DISCOUNTS
(Percent Mentions)

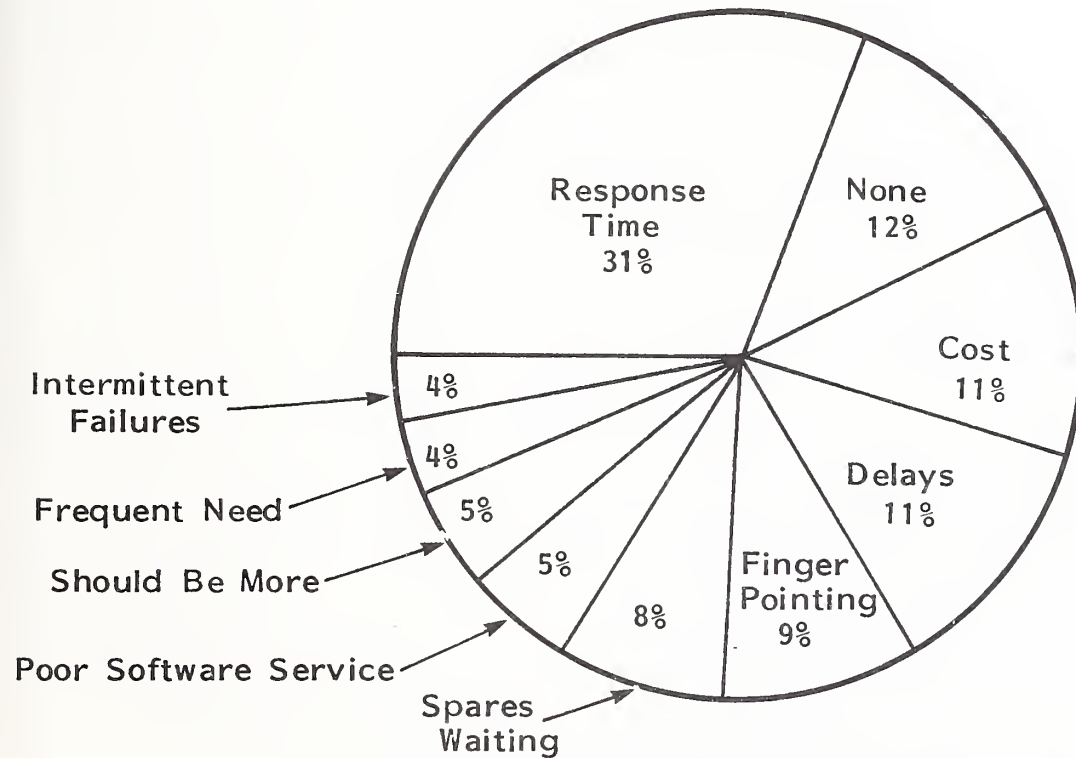


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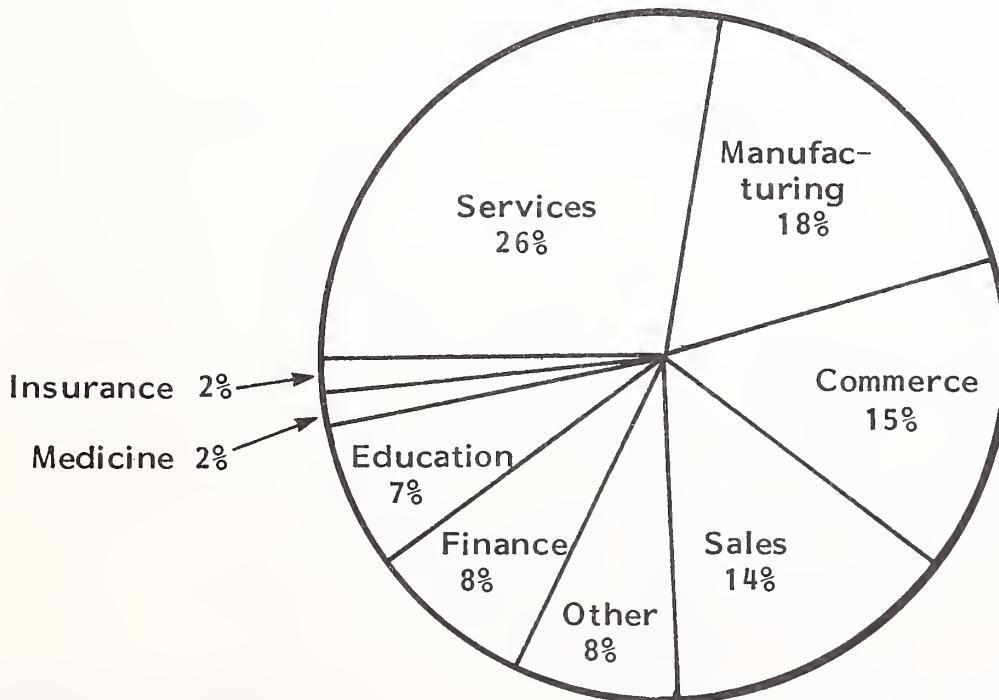
EXHIBIT C-13 (Cont.)

DEMOGRAPHICS IN FRANCE

USER COMPLAINTS ABOUT SERVICE
(Percent Mentions)



USER RESPONDENTS BY BUSINESS TYPE
(Percent Mentions)

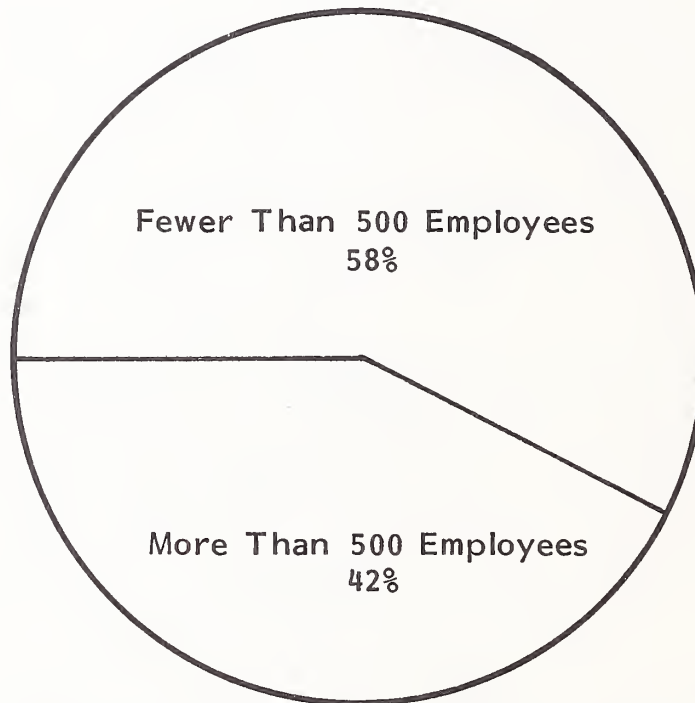


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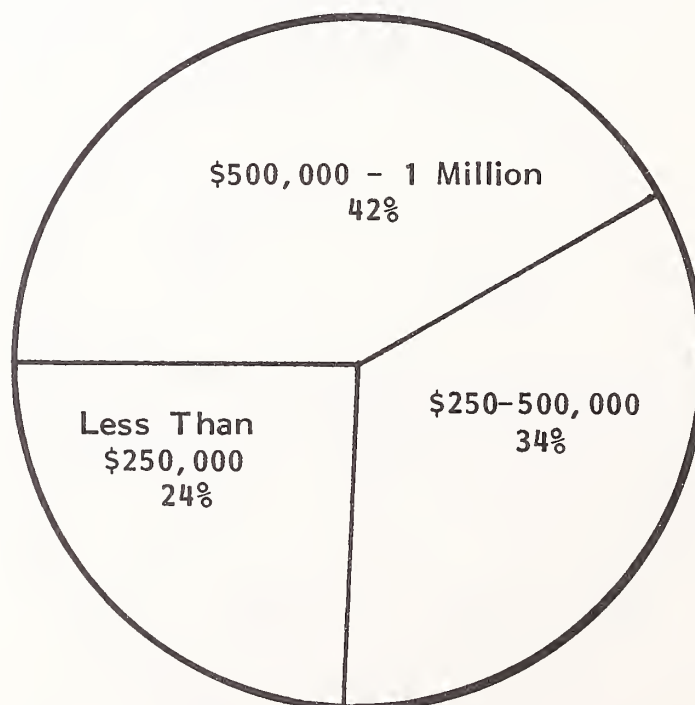
EXHIBIT C-13 (Cont.)

DEMOGRAPHICS IN FRANCE

USER RESPONDENTS BY SIZE OF COMPANY
(Percent Mentions)



USER RESPONDENTS' 1983 INFORMATION SYSTEMS BUDGETS
(Percent Mentions)



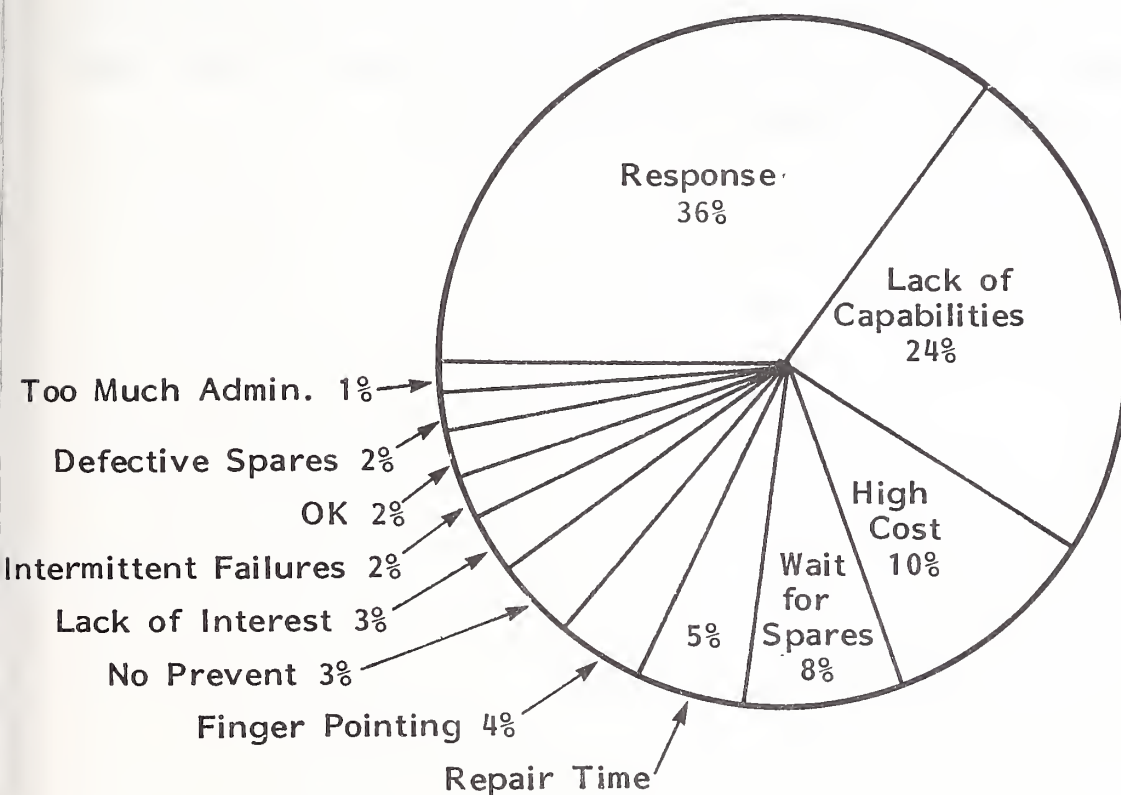
SOURCE: INPUT Survey
Continued

EXHIBIT C-13 (Cont.)

DEMOGRAPHICS IN FRANCE

USER PERCEPTION OF WORST FEATURES OF MAINTENANCE

(Percent Mentions)



SOURCE: INPUT Survey
Continued

- Most French user respondents are in the business of services, followed in prevalence by manufacturing and sales. French users typically have information systems budgets of \$500,000 to \$1 million. Slightly over half the respondent companies employ less than 500 people.
- Positive comments about service included compliments on good repair work and a capable staff. Suggestions for service improvements include: faster response, more resources and spares, and more training.

APPENDIX D: BENELUX USER DATABASE

APPENDIX D: BENELUX USER DATABASE

A. COMMENTARY

- The Benelux user database is characterised by a general perception of high-quality service and of acceptable levels of system performance, service response, repair time, and pricing.
- Opportunities exist for service vendors to decrease costs because Benelux users seem willing to help maintain their own systems. Furthermore, the TPM market in Benelux is potentially good.

B. QUALITY OF SERVICES

I. VENDOR RATINGS BY USER

- Exhibit D-1 provides a relative rating of vendors by users for each product category. All ratings but two are above average. Burroughs received a subpar evaluation for small-system maintenance and Compucorp received one for microcomputer maintenance. Philips and IBM share the honors for top scores.
- Exhibit D-2 indicates equipment installed for respondent users and is representative of that, rather than marketshare.

EXHIBIT D-1

BENELUX USER RANKING OF OVERALL VENDOR QUALITY

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATACOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Ericsson	-	6.0	7.0	-	-	-	-	-	-
Burroughs	6.0	3.5	6.3	7.5	-	-	-	-	6.0
CDC	-	5.5	-	-	10.0	-	-	-	-
DEC	-	6.7	7.0	-	-	-	-	-	8.0
CII HB	6.5	8.0	6.8	-	-	6.5	-	-	8.0
Hewlett- Packard	-	8.0	-	-	-	-	-	-	-
IBM	7.8	7.9	7.9	8.0	6.5	8.0	-	-	6.8
ICL	7.0	8.3	7.0	-	-	7.0	-	-	7.0
NCR	-	5.0	5.0	-	-	-	-	-	5.0
Philips	-	8.0	8.0	-	-	8.0	-	-	-
Sperry Univac	5.0	5.0	5.0	-	-	-	-	-	5.0
Nixdorf	-	6.5	-	-	-	-	-	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey
Continued

BENELUX USER RANKING OF OVERALL VENDOR QUALITY

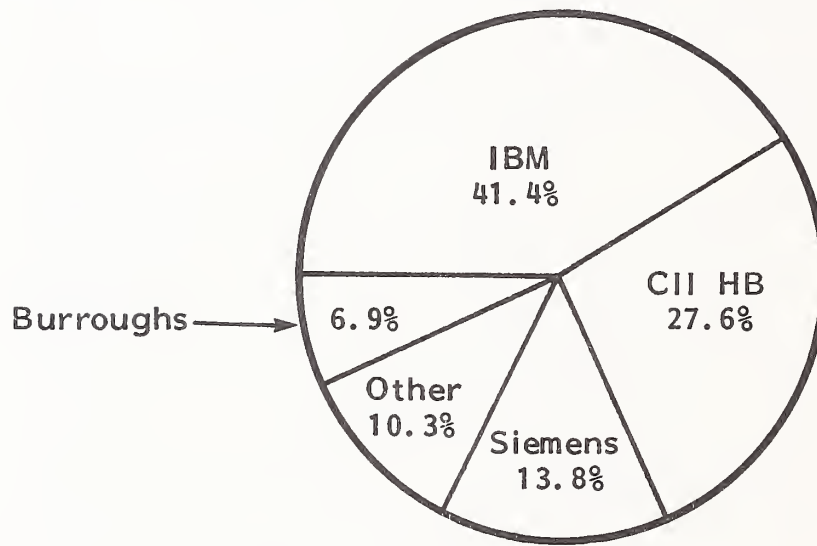
VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATACOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Siemens	6.0	8.0	6.3	8.0	5.0	-	-	-	5.0
BASF	-	-	9.0	-	-	-	-	-	-
STC	-	-	4.0	-	-	-	-	-	-
Telindes	-	-	-	8.5	-	-	-	-	-
Racal	-	-	-	8.4	-	-	-	-	-
ITT	-	-	9.5	8.0	-	-	-	-	-
Apple	-	-	-	-	5.5	-	-	-	-
Compucorp	-	-	-	-	1.0	-	-	-	-
Wang	-	8.0	-	-	-	8.0	-	-	-
Wordplex	-	-	-	-	-	6.5	-	-	-
Codex	-	-	-	7.3	-	-	-	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

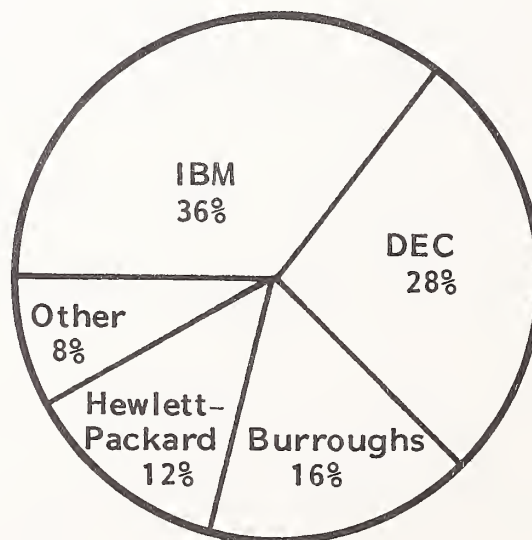
SOURCE: User Survey

EXHIBIT D-2

BENELUX USERS' INSTALLED EQUIPMENT
(Percent Using)



LARGE SYSTEMS

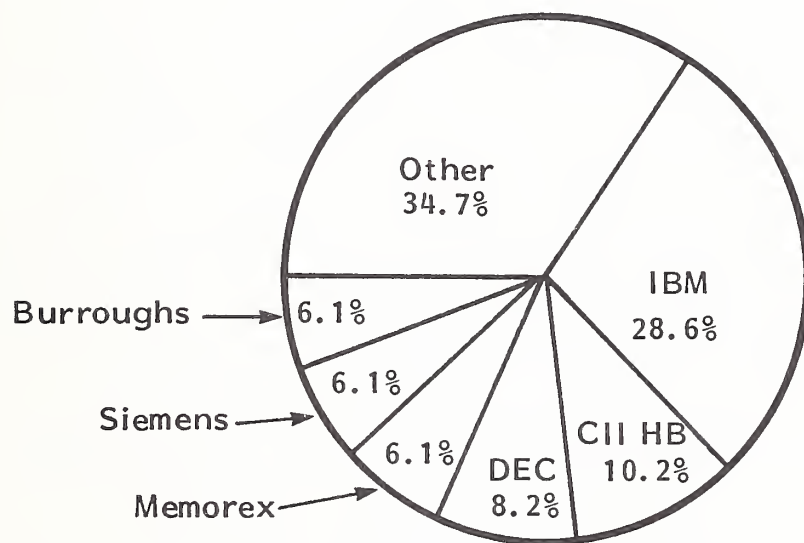


SMALL SYSTEMS

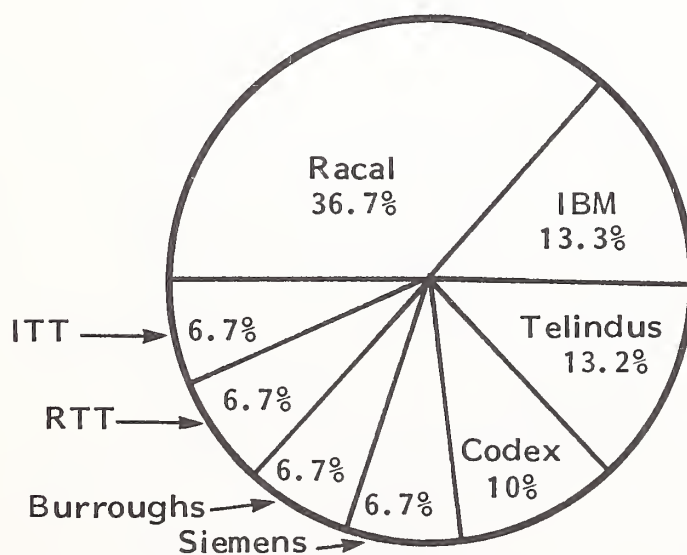
SOURCE: User Survey
Continued

EXHIBIT D-2 (Cont.)

BENELUX USERS' INSTALLED EQUIPMENT
(Percent Using)



PERIPHERALS AND TERMINALS

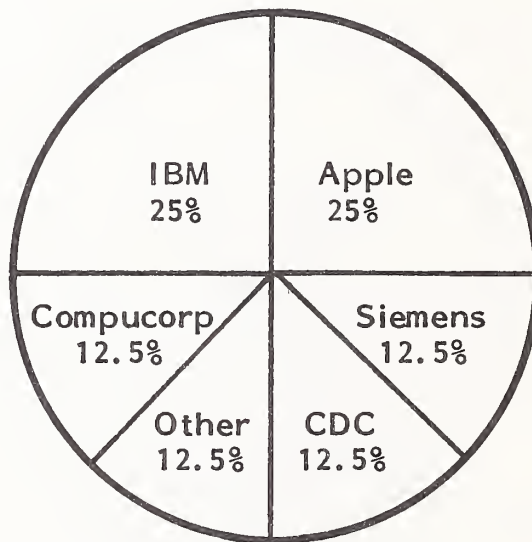


· DATACOMMUNICATIONS

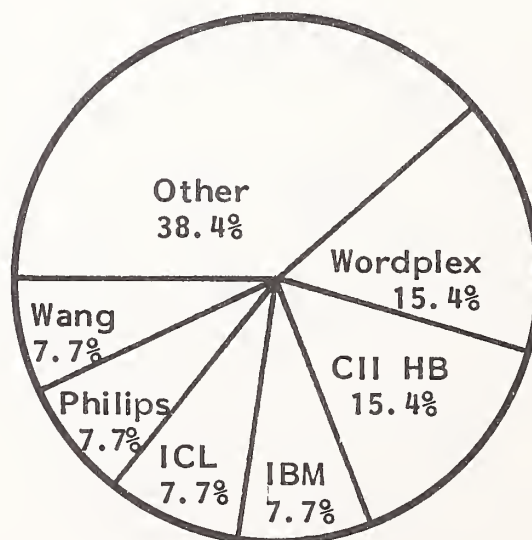
Continued
SOURCE: User Survey

EXHIBIT D-2 (Cont.)

BENELUX USERS' INSTALLED EQUIPMENT
(Percent Using)



MICROCOMPUTERS



WORD PROCESSORS

Continued

SOURCE: User Survey

2. QUALITY ATTRIBUTES AND QUALITY BY PRODUCT

- Exhibit D-3 shows user ratings of quality in terms of attributes. Below-average scores include:
 - Remote diagnostics - large systems, small systems, peripherals and terminals, datacommunications, personal computers.
 - Preventive maintenance effectiveness - peripherals and terminals, datacommunications.
 - Software support capability - datacommunications.
 - Quality of service management - PBAX.
- Over a three-year span, 1981-1983, service quality has changed:
 - Improvements include:
 - Quality of engineers.
 - Quality of service management.
 - Availability of spare parts.
 - Quality of information and communications.
 - Degradation has occurred for:
 - Overall quality of service (slightly).
 - Remote diagnostics.
 - Value of service compared to price.

EXHIBIT D-3

BENELUX USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE	QUALITY OF ENGINEERS	QUALITY OF SERVICE OF MANAGEMENT	AVAILABILITY OF SPARE PARTS	SOFTWARE SUPPORT CAPABILITY
All Systems 1983	7.0	7.2	6.9	7.3	6.2
1982	7.1	6.9	6.6	6.8	-
1981	6.8	6.8	6.4	6.0	-
Large Systems	7.1	7.3	6.8	6.7	5.9
Small Systems	6.9	7.3	6.8	7.6	5.7
Peripherals and Terminals	7.2	7.2	6.5	6.8	6.8
Datacommunications	5.9	5.7	5.5	5.4	2.5
Personal Computers	5.9	7.0	7.1	7.8	6.6
Word Processors	6.8	7.6	7.3	7.4	7.3
Copiers	-	-	-	-	-
PBX	6.5	6.0	4.0	6.0	6.5
Systems Software	6.8	6.5	6.2	-	5.7
Applications Software	5.6	5.3	5.7	-	5.1

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey
Continued

BENELUX USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS	REMOTE DIAGNOSTICS	QUALITY OF INFORMATION & COMMUNICATIONS	VALUE OF SERVICE COMPARED TO PRICE	QUALITY OF MARKETING & SALESPEOPLE	PRODUCT RELIABILITY
All Systems 1983 1982 1981	6.0 - -	5.0 5.3 5.6	6.3 5.7 5.0	6.1 6.1 6.2	7.0 - -	7.7 - -
Large Systems	5.9	4.6	5.9	5.3	7.3	7.6
Small Systems	6.0	4.3	6.1	5.8	6.2	7.7
Peripherals and Terminals	4.9	4.1	5.9	5.9	6.9	7.5
Datacommunications	2.6	2.8	4.9	4.5	5.2	6.1
Personal Computers	8.0	2.7	7.0	6.4	7.8	8.2
Word Processors	5.6	5.3	6.4	7.0	7.4	7.9
Copiers	-	-	-	-	-	-
PBX	5.0	5.0	5.5	6.0	6.0	6.0
Systems Software	6.3	5.3	6.6	6.0	6.4	7.0
Applications Software	6.3	6.3	5.3	5.7	5.6	7.0

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

- Exhibit D-13 indicates user perception of service quality by product. Datacommunications, PBAX, and micros received subpar ratings.

C. SERVICE ISSUES, AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

- Importance of maintenance issues to users is shown in Exhibit D-4. Of significant importance are the following:
 - System availability - large systems, PBAX, systems software.
 - Reliability - software.
 - Having a choice for service - small systems.
- Over the past three years there has been a slight general decline in users' interest in service issues.
- Availability, as shown in Exhibit D-5, is safely above the threshold of pain and is very nearly at the average ideal performance level. Users have slightly relaxed their performance requirements since 1981. This is due to less dependency on single types of equipment.
- Exhibits D-6 and D-7 show response time and repair time respectively. Actual response and fix times are well outside the threshold of pain but are considerably less than ideal.

BENELUX USERS' RATING OF IMPORTANCE OF MAINTENANCE ISSUES

SERVICE ISSUES	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems In Benelux		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		1983	1982	1981
Systems Availability	9.4	8.9	8.5	-	8.0	7.6	9.0	-	9.3	8.9		8.9	9.5	8.3
Response Time	8.9	8.1	8.1	-	8.6	7.7	8.0	-	8.8	7.7		8.3	8.1	9.2
Repair Time	8.4	8.3	7.8	-	5.6	7.4	7.0	-	8.9	7.3		8.1	7.9	8.6
Equipment Reliability	8.8	8.9	8.4	-	7.6	8.2	8.0	-	9.3	8.3		8.7	9.2	8.6
Software Maintenance	7.6	7.5	7.8	-	5.8	6.4	6.0	-	8.2	8.0		7.4	7.9	7.6
Price of Maintenance	6.8	6.5	6.6	-	6.0	6.4	7.0	-	6.3	6.3		6.5	5.9	8.9
Preventive Maintenance	5.9	6.2	6.1	-	5.8	6.0	7.0	-	7.3	7.5		6.2	6.8	6.9
Having Same Engineer Each Call	6.3	6.9	5.6	-	5.2	6.1	7.0	-	7.2	6.5		6.3	N/A	N/A
Remote Diagnostics	5.0	5.5	4.4	-	6.4	4.4	0.0	-	6.5	5.0		5.3	4.8	5.6
Uptime Guarantees	7.0	7.2	6.5	-	6.8	6.4	0.0	-	7.8	7.0		7.0	7.0	5.9
Having a Choice for Service	5.1	9.3	5.2	-	5.6	6.1	8.0	-	4.8	4.5		9.0	N/A	N/A

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

EXHIBIT D-5
BENELUX RESPONDENTS' VIEW OF SYSTEM AVAILABILITY
(Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Receive	95.4%	93.2%	94.3%	-	90.0%	92.5%	95.0%	-	93.1%	93.0%	94.0%
Ideally Would Like	98.2	96.6	97.4	-	92.8	95.1	95.0	-	96.6	99.0	96.9
TOP*	93.1	84.6	91.4	-	73.0	73.1	99.0	-	88.6	88.8	85.1
<u>1982</u>											
Received	96.6	90.4	96.8	N/A	N/A	98.8	N/A	-	96.4	96.3	-
Ideally Would Have Liked	99.7	97.7	99.3	N/A	N/A	100.0	N/A	-	98.7	97.0	-
TOP*	95.4	91.4	94.8	N/A	N/A	93.0	N/A	-	94.5	86.7	-
<u>1981</u>											
Received	97.7	96.8	97.4	N/A	N/A	93.2	N/A	-	98.1	94.0	-
Ideally Would Have Liked	99.1	98.7	99.0	N/A	N/A	98.1	N/A	-	99.2	98.4	-
TOP*	95.1	94.7	95.3	N/A	N/A	95.1	-	-	98.0	94.9	-

* TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Survey

EXHIBIT D-6
BENELUX RESPONDENTS' VIEW OF RESPONSE TIME
(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Receive	1.9	5.2	7.3	0.9	16.0	5.9	2.0	-	3.5	21.6	5.7
Ideal	0.8	2.7	3.9	0.6	30.6	2.8	2.0	-	3.3	4.6	3.7
TOP*	3.3	9.3	9.4	1.1	10.8	12.1	0.5	-	5.0	14.2	8.6

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT D-7
BENELUX RESPONDENTS' VIEW OF REPAIR TIME
(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Receive	2.5	2.9	1.4	0.5	11.6	3.3	4.0	-	6.8	22.4	4.0
Ideal	1.0	1.4	1.3	0.4	6.2	2.0	1.0	-	2.3	3.8	1.7
TOP*	5.0	5.9	6.6	0.8	40.2	6.3	1.0	-	7.7	10.2	7.5

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

D. DESIRE FOR DIFFERENT CONTRACTS, WILLINGNESS TO AID SERVICER, AND WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

- Benelux users do not show a strong interest in different contracts generally. However, automatic contract renewal and annual invoicing are very desirable to PBAX users. Also, large-systems users want more flexibility and bundled contracts, as shown in Exhibit D-8.
- Exhibit D-9 shows a relatively keen willingness to help service vendors diagnose faults and patch software. Personal computer users are quite willing to carry portable units into repair centres.
- As is shown in Exhibit D-10, Benelux users are not overly enthusiastic about paying extra premiums for better service.

E. PRICING

- Prices for service in Benelux are generally acceptable to users, except for software, which is close to being too high.
- Actual price increases are outside the threshold of pain, as Exhibits D-11 and D-12 show.

F. ATTITUDES AND DEMOGRAPHICS

- Exhibit D-13 graphically describes Benelux users' demographics and their attitudes about service.

EXHIBIT D-8

BENELUX USERS' DESIRE FOR DIFFERENT CONTRACTS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Long-Term Contract	4.8	5.1	4.5	0.6	3.8	5.0	5.0	-	4.4	3.8	4.5	
Automatic Renewal	5.7	5.6	6.4	1.2	3.3	5.1	10.0	-	5.0	5.2	5.5	
Annual Invoicing	3.5	3.9	4.1	0.6	3.5	5.4	10.0	-	3.9	3.0	3.8	
More Flexibility	7.7	6.7	5.8	1.8	5.0	5.9	1.0	-	6.6	7.5	6.7	
Bundling*	7.5	6.9	6.0	1.4	5.5	8.6	5.0	-	6.9	9.2	6.9	

Rating: 1 = Less Desirable, 10 = Very Desirable

* 1 = Bundled, 10 = Unbundled

SOURCE: INPUT Survey

EXHIBIT D-9

BENELUX USERS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT

HELP TO VENDOR	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Helping to Diagnose	7.4	7.5	7.9	1.3	5.0	7.1	10.0	-	7.9	8.2	7.3
Helping Replace Boards	5.4	5.7	6.3	1.4	4.8	5.7	1.0	-	-	-	6.0
Helping to Patch Software	7.7	7.5	7.6	1.4	4.8	5.4	1.0	-	7.9	7.5	7.2
Delivering Portable Machines to Repair Centres	4.4	3.7	4.3	1.8	7.3	5.6	1.0	-	-	-	4.8

Rating: 1 = Unwilling, 10 = Willing

SOURCE: INPUT Survey

EXHIBIT D-10

BENELUX USERS' WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Guaranteed Uptime	2.3	2.4	1.9	0.5	1.0	1.0	1.0	-	2.4	2.3	2.1
Guaranteed Response Time	2.1	1.9	2.0	0.6	1.5	1.3	1.0	-	1.8	2.3	1.9
Guaranteed Turnaround Time on Software	1.9	1.5	1.6	0.5	2.0	1.5	1.0	-	1.5	3.0	1.7
Software Consulting From Servicer	1.9	1.5	1.5	0.6	1.8	1.9	1.0	-	1.5	2.7	1.7
Software Enhancements From Servicer	1.8	1.7	1.6	0.6	1.3	1.6	1.0	-	2.1	2.3	1.8
Personalised Service	2.0	1.9	1.8	0.4	1.0	1.9	1.0	-	2.5	1.7	1.8

Rating: 1 = None, 2 = Up to 1% Basic Charge, 3 = Up to 5%, 4 = 10%, 5 = 15%

SOURCE: INPUT Survey

EXHIBIT D-11
BENELUX RESPONDENTS' VIEW OF MAINTENANCE PRICING
 (Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Received 1982	6.2%	6.0%	4.9%	0.7%	2.5%	4.0%	1.0%	-	4.6%	3.0%	4.9%
Expected 1983	6.2	6.1	5.7	0.7	5.0	4.0	10.0	-	11.9	3.8	6.2
TOP* 1983	10.3	10.1	9.9	2.1	5.0	7.5	5.0	-	17.7	6.5	10.9
<u>1982</u>											
Received 1981	6.6	6.0	5.4	N/A	N/A	3.4	N/A	-	6.2	7.0	-
Expected 1982	7.4	3.8	5.2	N/A	N/A	4.5	N/A	-	6.3	6.0	-
TOP* 1982	9.2	7.5	8.0	N/A	N/A	10.0	N/A	-	10.0	5.5	-
<u>1981</u>											
Received 1980	4.8	6.2	5.4	N/A	N/A	N/A	N/A	-	4.8	8.2	-
Expected 1981	4.5	5.0	5.4	N/A	N/A	6.0	N/A	-	5.0	6.5	-
TOP* 1981	7.5	7.5	7.5	N/A	N/A	7.5	N/A	-	8.4	9.2	-

* TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Survey

EXHIBIT D-12

BENELUX RESPONDENTS' VIEW OF MAINTENANCE PRICING TERMS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Benelux
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Current Contract Prices:	7.6	7.4	6.9	-	7.5	6.4	7.0	-	8.4	8.8	7.3	
	7.4	7.6	7.2	-	7.8	6.0	5.0	-	8.4	8.0	7.3	
	8.1	7.7	7.7	-	8.8	5.8	5.0	-	7.9	7.0	7.7	
Software Support Rates:	8.2	7.6	8.1	-	5.5	6.0	5.0	-	8.3	7.8	7.7	

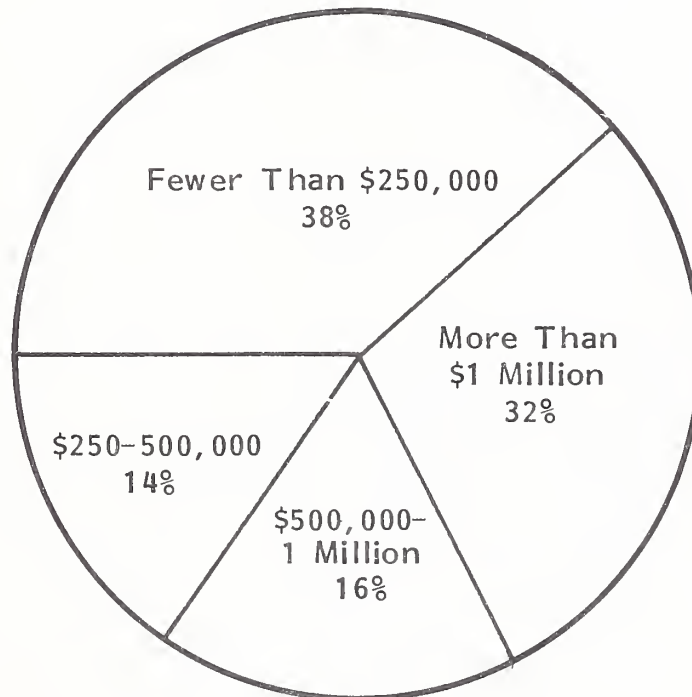
* TOP = Threshold of Pain (Minimum Acceptable)
Rating: 1 = Too Low, 10 = Too High

SOURCE: INPUT Survey

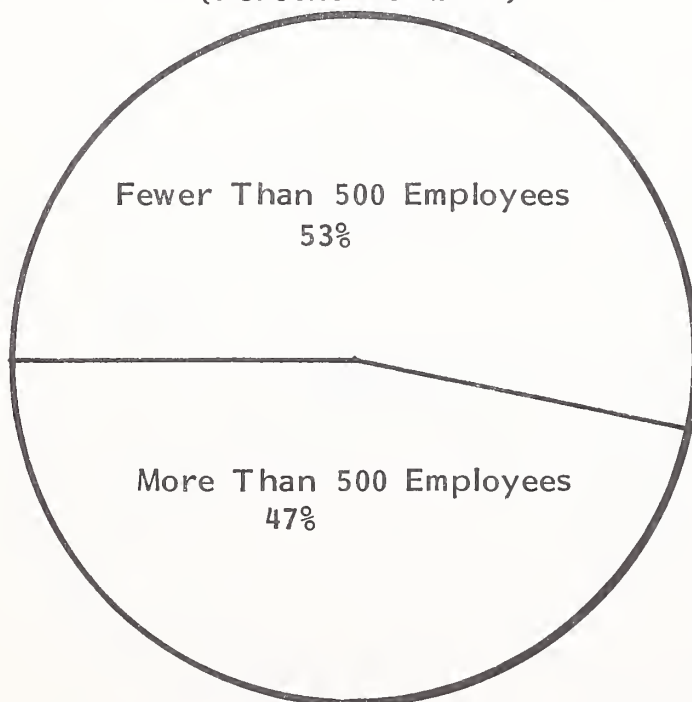
EXHIBIT D-13

DEMOGRAPHICS IN BENELUX

USER RESPONDENTS' 1983 INFORMATION SYSTEMS BUDGETS (Percent Mentions)



USER RESPONDENTS BY SIZE OF COMPANY (Percent Mentions)

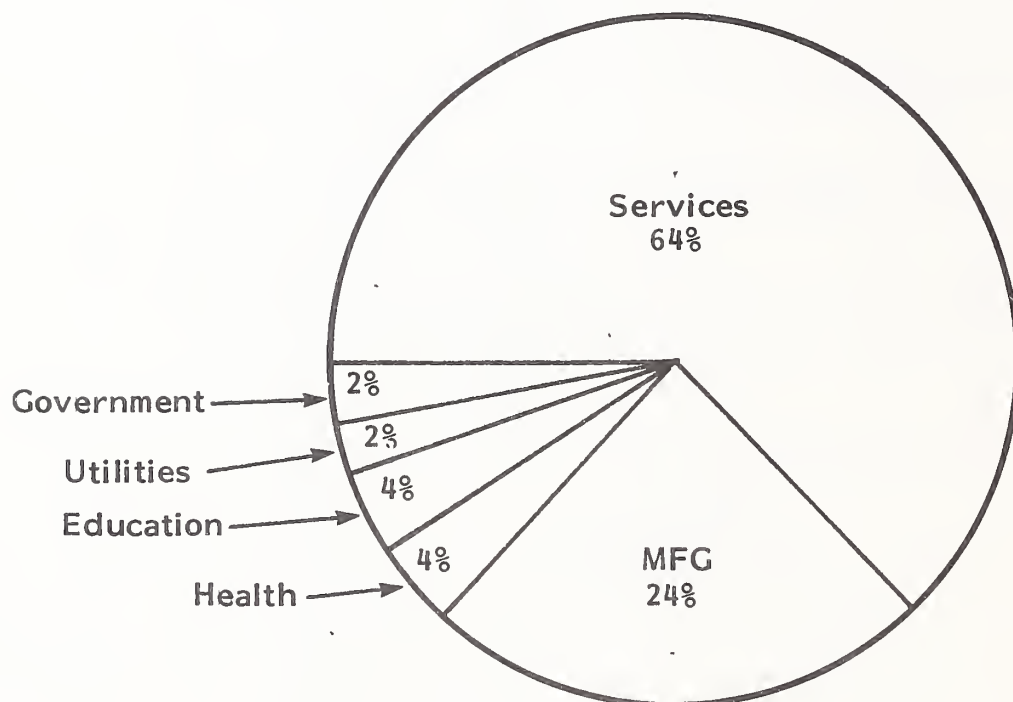


SOURCE: INPUT Survey
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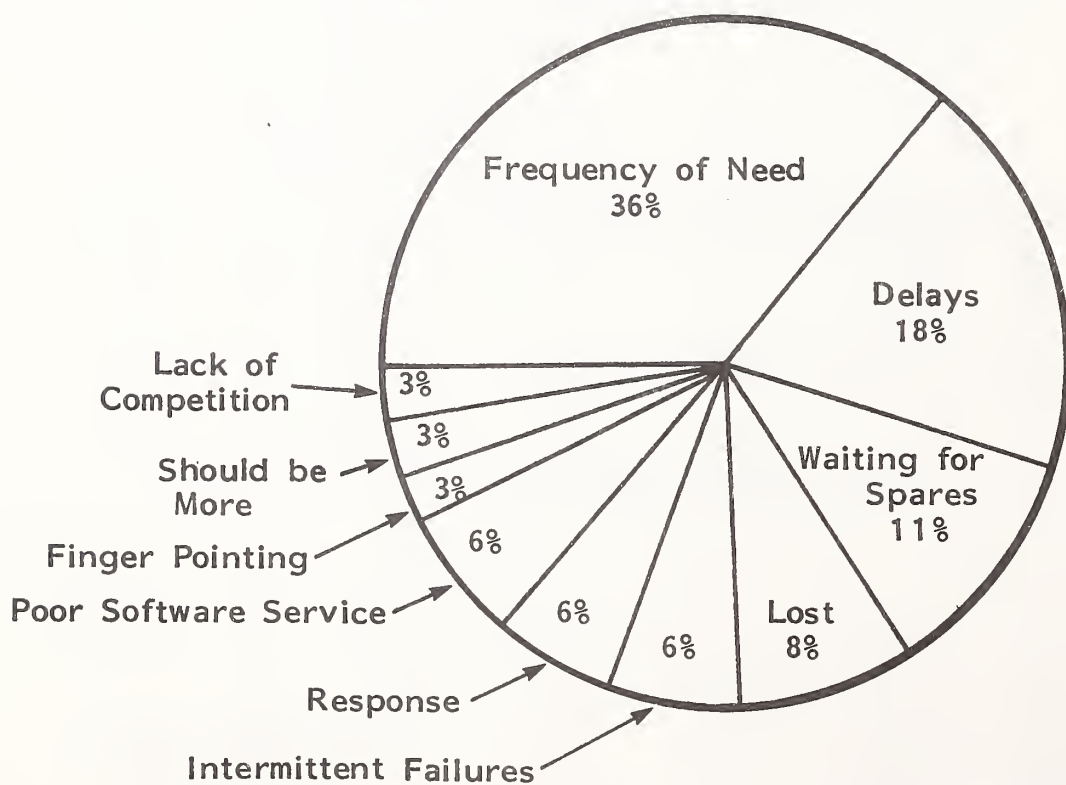
EXHIBIT D-13 (Cont.)

DEMOGRAPHICS IN BENELUX

USER RESPONDENTS BY BUSINESS TYPE
(Percent Mentions)



USER COMPLAINTS ABOUT SERVICE
(Percent Mentions)

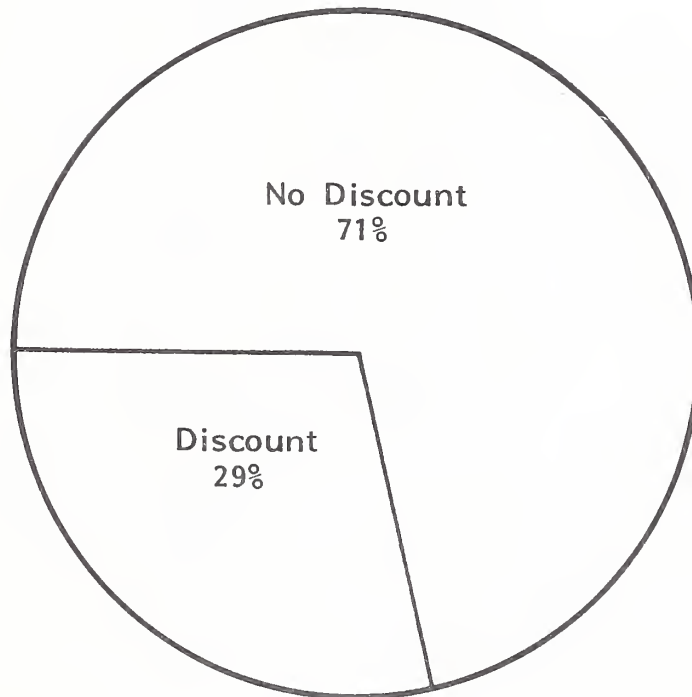


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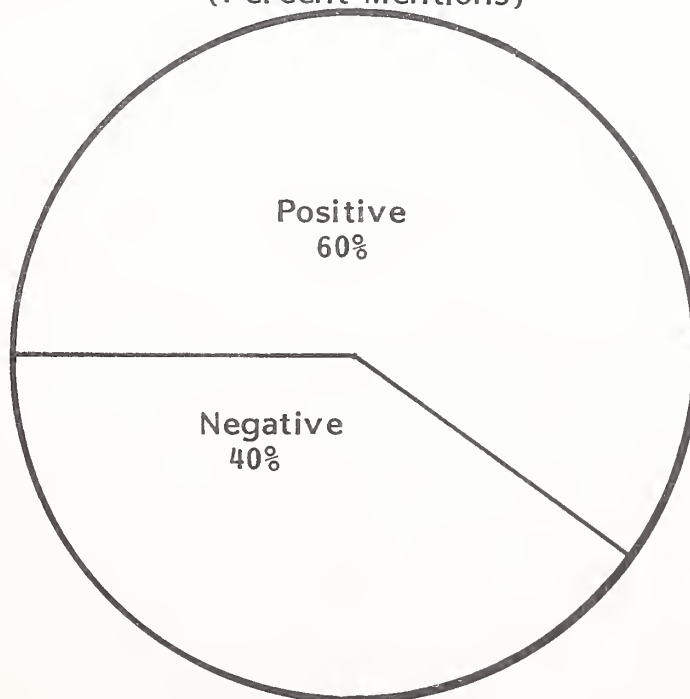
EXHIBIT D-13 (Cont.)

DEMOGRAPHICS IN BENELUX

MAINTENANCE DISCOUNTS
(Percent Mentions)



USER ATTITUDES REGARDING PREVENTIVE MAINTENANCE
(Percent Mentions)

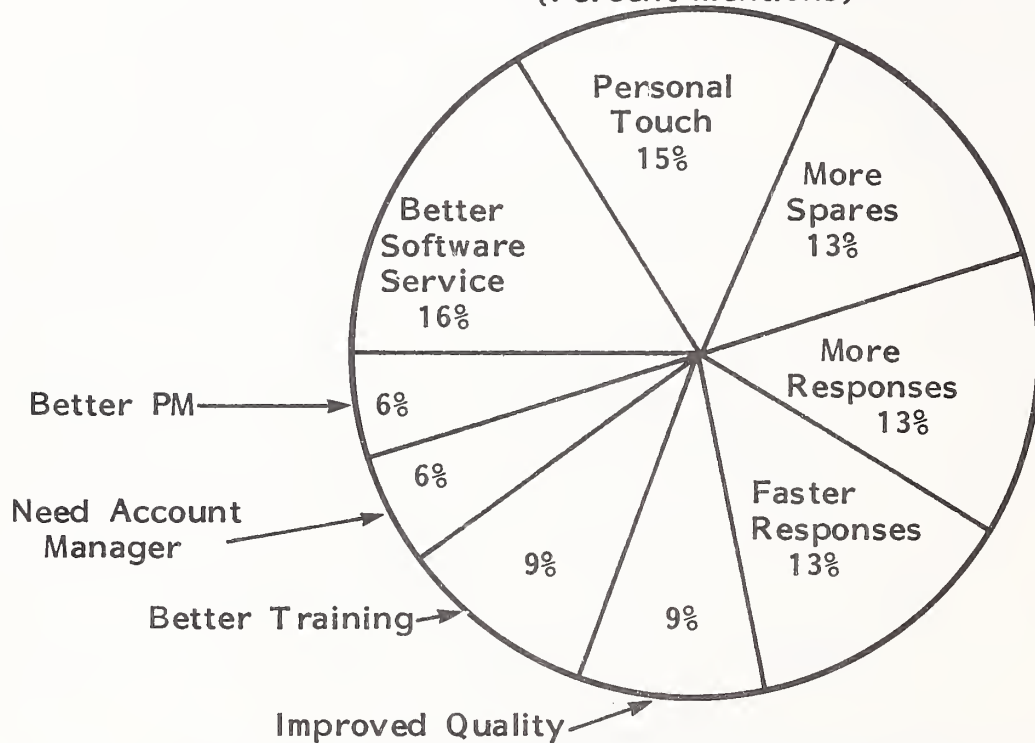


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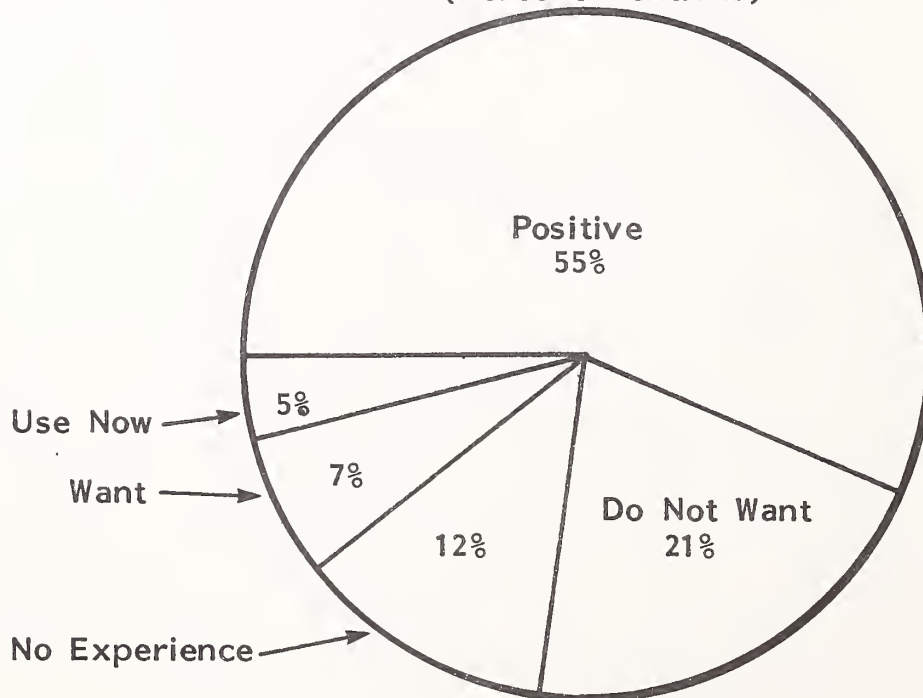
EXHIBIT D-13 (Cont.)

DEMOGRAPHICS IN BENELUX

USER SUGGESTIONS FOR SERVICE IMPROVEMENTS
(Percent Mentions)



USER ATTITUDES TOWARD REMOTE DIAGNOSTICS
(Percent Mentions)

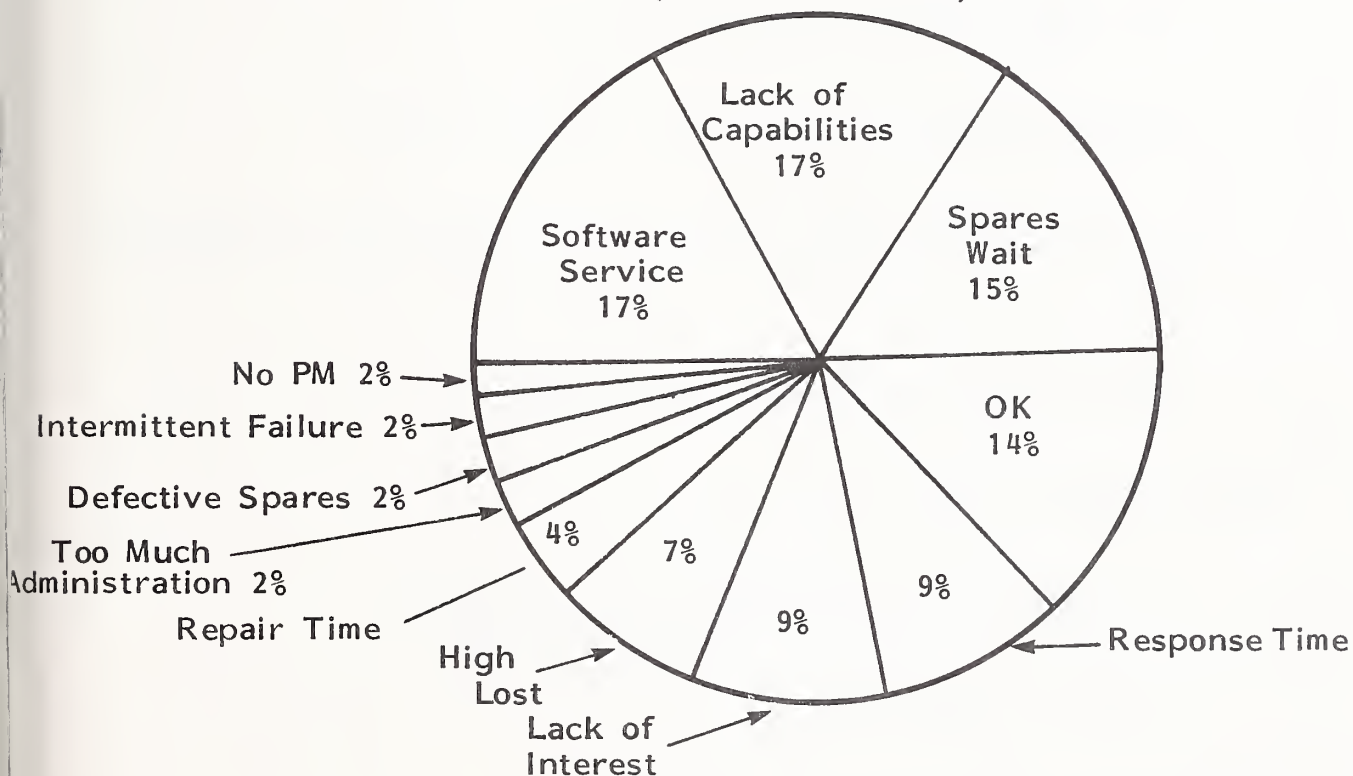


SOURCE: INPUT Survey
Continued

EXHIBIT D-13 (Cont.)

DEMOGRAPHICS IN BENELUX

USER PERCEPTION OF WORST FEATURES OF MAINTENANCE
(Percent Mentions)



SOURCE: INPUT Survey
Continued

- Users are concerned about the general lack of capability of service firms, the time wait for spare parts, and the frequent need for service.
- Other highlights of user service attitudes include the following:
 - Few maintenance discounts are offered.
 - There is a reasonably good potential market for TPM.
 - Preventive maintenance proponents outnumber nonproponents six to four.
 - Users are positive about remote diagnostics.
- The typical Benelux user:
 - Has an information systems budget under \$250,000.
 - Employs over 500 people.
 - Is in the services business.
- Benelux users have a positive impression of service vendors' attitude, capability, and response. Users recommend as improvements:
 - Better software support.
 - Adding a personal touch to service.
 - More resources.

APPENDIX E: SCANDINAVIAN USER DATABASE

APPENDIX E: SCANDINAVIAN USER DATABASE

A. COMMENTARY

- The Scandinavian user database has the following distinct characteristics:
 - Maintenance prices are too high.
 - Datacommunications service needs improvement.
 - Remote diagnostics are less important to users than personal contact by engineers.
 - Software maintenance needs attention.
 - Overall quality of service is good.
 - Availability, response times, and repair times are adequate, but users would like to see improved response times.
- Opportunities in the Scandinavian market exist for new types of maintenance contracts, including:

- Uptime guarantees.
 - Guaranteed response.
 - Software consulting and response.
 - Personalised service.
- Users indicate they are willing to pay additional premiums of between 5% and 10% of base maintenance for each type of extra or improved service.

B. QUALITY OF SERVICE

I. VENDOR RATINGS BY USER

- Exhibit E-1 shows vendors' ratings of overall quality of service as assessed by user respondents. Information systems vendors in Scandinavia receive exceptionally high ratings.
- No rating is below average.
 - Twelve perfect (10) scores were given to:
 - DEC - large systems.
 - CII Honeywell Bull - large systems and systems software.
 - IBM - datacommunications.
 - Sperry - peripherals and terminals; datacommunications.

SCANDINAVIAN USER RANKING OF VENDOR OVERALL QUALITY

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATA COM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Burroughs	9.0	-	6.0	-	-	-	-	-	9.0
DEC	10.0	8.2	8.0	-	-	-	-	-	-
CII HB	10.0	7.5	5.0	-	-	-	-	-	10.0
Hewlett- Packard	-	8.5	-	-	-	-	-	-	-
IBM	9.8	5.5	7.4	10.0	-	-	-	-	9.8
ICL	9.0	-	9.0	-	-	-	-	-	-
Prime	-	7.5	-	-	-	-	-	-	-
Sperry Univac	9.5	-	10.0	10.0	-	-	-	-	8.0
Norsh	-	9.0	-	-	-	-	-	-	9.0
Ericsson	-	-	10.0	-	-	-	-	-	10.0
Tandbe	-	-	10.0	-	-	-	-	-	-
Memorex	-	-	7.0	-	-	-	-	-	-
Nokia	-	-	-	10.0	-	-	-	-	-
PTT	-	-	-	10.0	10.0	-	-	-	-
Tandy	-	-	-	-	9.0	-	-	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey
Continued

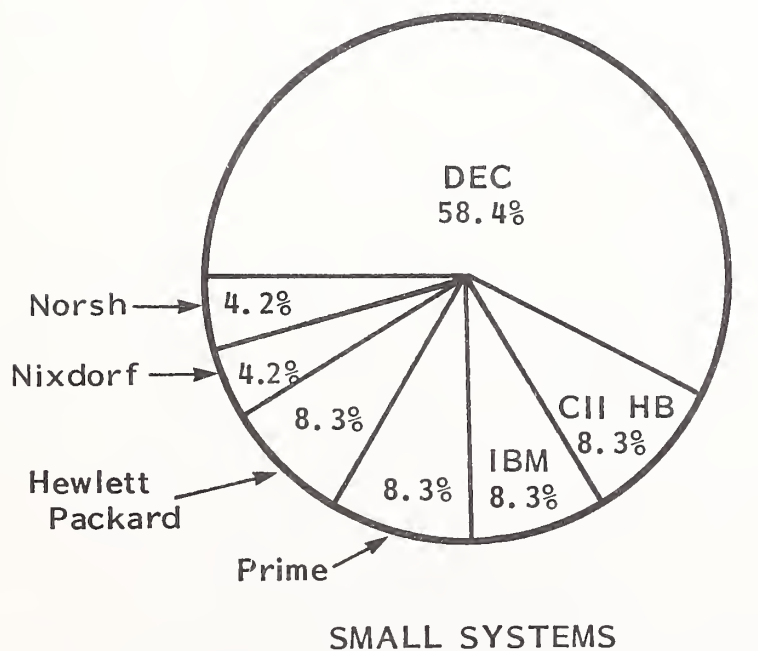
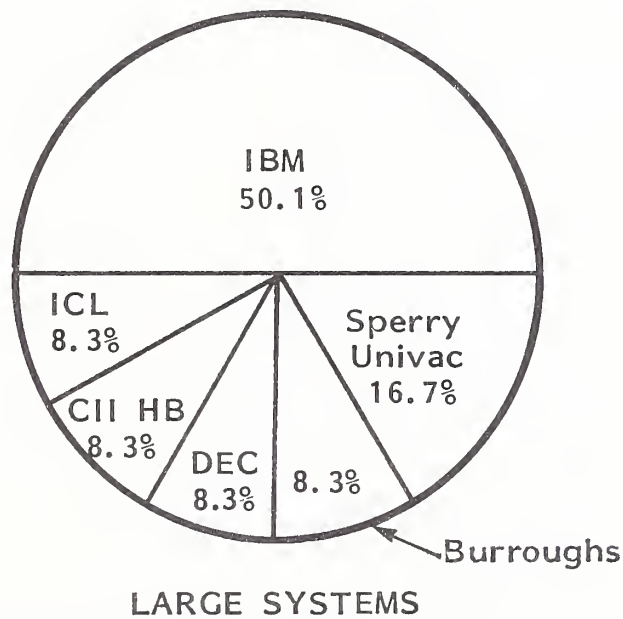
- Siemens - systems software.
 - Ericsson - systems software; peripherals and terminals.
 - Tanbe - peripherals and terminals.
 - Nokia - datacommunications.
 - PTT - datacommunications.
- Exhibit E-2 provides an analysis of installed equipment as expressed by user respondents. It represents equipment used by respondents rather than market-share.

2. QUALITY ATTRIBUTES AND QUALITY BY PRODUCT

- Exhibit E-3 shows user quality ratings by quality attribute.
 - Below-average scores include:
 - Remote diagnostics - all systems, small systems, peripherals and terminals, datacommunications, and word processors.
 - Software support, datacommunications, and personal computers.
 - Preventive maintenance, datacommunications, and personal computers.
 - Quality of information and communications, datacommunications, and personal computers.
 - Availability of spare parts - personal computers.

EXHIBIT E-2

SCANDINAVIAN USERS' INSTALLED EQUIPMENT
(Percent Using)

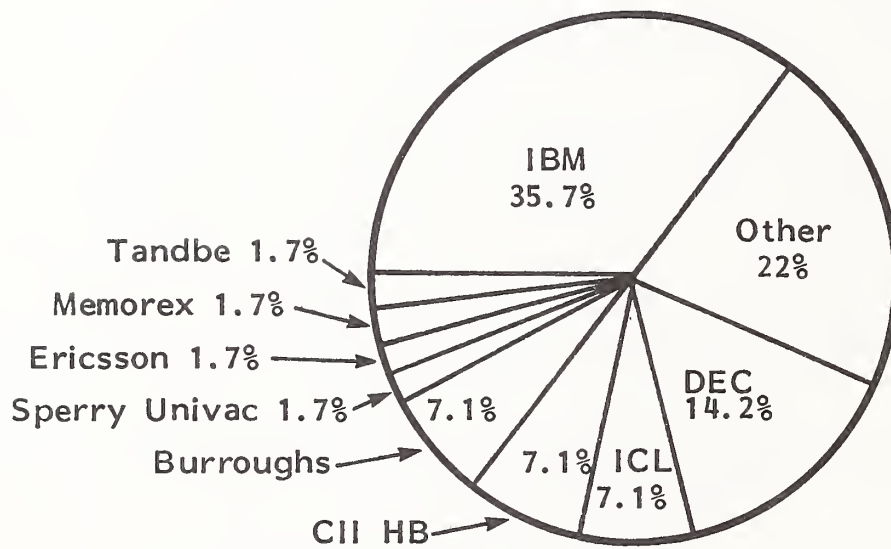


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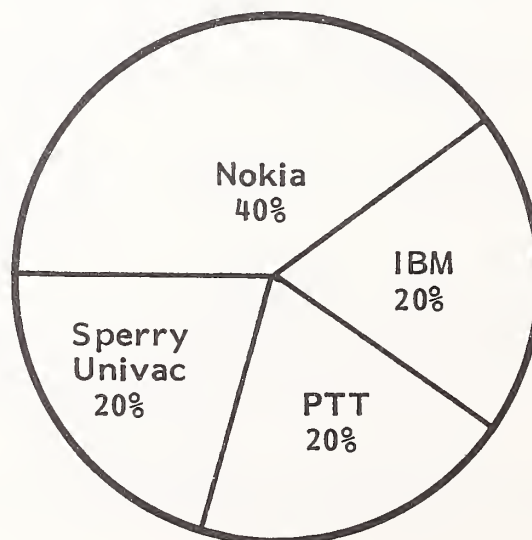
SOURCE: User Survey

EXHIBIT E-2 (Cont.)

SCANDINAVIAN USERS' INSTALLED EQUIPMENT
(Percent Using)



PERIPHERALS AND TERMINALS



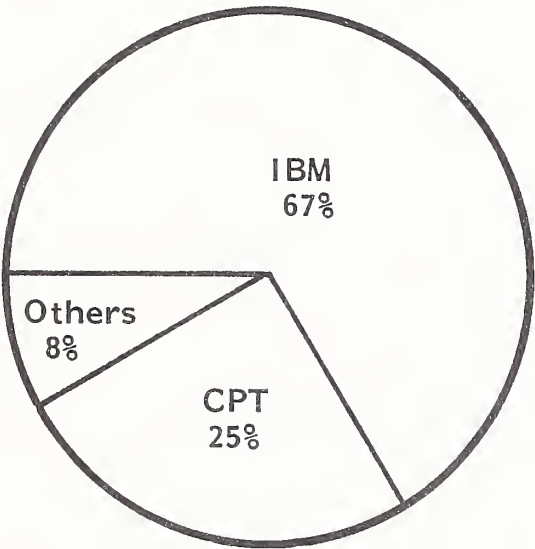
DATACOMMUNICATIONS

Continued

SOURCE: User Survey

EXHIBIT E-2 (Cont.)

SCANDINAVIAN USERS' INSTALLED EQUIPMENT
(Percent Using)



WORD PROCESSORS

SOURCE: User Survey

EXHIBIT E-3

SCANDINAVIAN USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE	QUALITY OF ENGINEERS	QUALITY OF SERVICE MANAGEMENT	AVAILABILITY OF SPARE PARTS	SOFTWARE SUPPORT CAPABILITY
All Systems 1983 1982 1981	6.9 7.1 6.4	7.1 7.8 6.8	6.3 7.4 5.8	6.7 8.6 6.4	5.3 - -
Large Systems	7.4	7.8	6.9	7.1	5.8
Small Systems	7.2	7.0	6.4	7.3	5.2
Peripherals and Terminals	7.1	7.0	6.7	6.8	5.7
Datacommunications	7.6	7.2	6.5	7.1	2.6
Personal Computers	5.5	5.7	5.0	3.3	3.7
Word Processors	6.4	6.3	6.7	6.7	6.6
Copiers	-	-	-	-	-
PBX	-	-	-	-	-
Systems Software	6.6	7.5	5.6	-	5.3
Applications Software	6.4	7.0	5.4	-	5.3

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey
Continued

SCANDIANAVIAN USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS	REMOTE DIAGNOSTICS	QUALITY OF INFORMATION & COMMUNICATIONS	VALUE OF SERVICE COMPARED TO PRICE	QUALITY OF MARKETING & SALESPEOPLE	PRODUCT RELIABILITY
All Systems 1983 1982 1981	5.6 - -	4.6 7.0 3.8	5.2 6.1 6.4	6.3 5.9 6.2	5.4 - -	7.6 - -
Large Systems	6.0	5.8	5.4	6.3	5.9	8.3
Small Systems	5.9	4.3	5.2	5.7	5.2	8.0
Peripherals and Terminals	6.5	3.9	5.5	6.3	5.6	7.6
Datacommunications	3.3	2.5	4.3	6.1	4.0	7.6
Personal Computers	3.0	5.0	4.3	6.0	5.0	5.0
Word Processors	4.0	3.3	5.2	6.3	5.8	6.3
Copiers	-	-	-	-	-	-
PBX	-	-	-	-	-	-
Systems Software	5.7	5.5	5.0	7.1	-	-
Applications Software	5.4	5.5	6.0	6.8	-	-

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

- In all but two attributes (quality of information and communications; value of service compared to price), quality levels improved from 1981 to 1982. However, in 1983 ratings for all quality attributes were lower than in 1982, indicating that demand for better service is increasing at a faster rate than better service itself.
- Exhibit E-3 shows users' reactions to quality of service by product segment. Datacommunications, microcomputers, and word processors receive below-average scores.

C. SERVICE ISSUES, AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

- Importance of maintenance issues from Scandinavian users' perspectives are shown on a relative basis in Exhibit E-4.
 - Important maintenance issues in the users' view (rating of above nine) include:
 - Large-systems availability - response time and reliability.
 - Datacommunications availability - repair time and reliability.
 - Personal computer availability - reliability.
 - Systems software availability - repair time and reliability.
 - Applications software - reliability and response time.

SCANDINAVIAN USERS' RATING OF IMPORTANCE OF MAINTENANCE ISSUES

SERVICE ISSUES	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems In Scandinavia		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		1983	1982	1981
Systems Availability	9.7	8.2	7.9	9.3	10.0	8.7	-	-	9.5	9.5		8.8	-	-
Response Time	9.0	7.4	7.5	8.6	7.0	7.3	-	-	8.9	9.0		8.2	-	-
Repair Time	8.7	7.4	7.2	9.0	7.0	8.0	-	-	9.0	8.8		8.2	-	-
Equipment Reliability	9.5	8.6	8.6	9.3	10.0	8.0	-	-	9.0	8.7		8.9	-	-
Software Maintenance	7.7	6.2	6.4	8.3	5.0	7.5	-	-	8.2	7.3		7.3	-	-
Price of Maintenance	6.3	6.0	6.1	5.8	5.0	6.7	-	-	5.7	6.3		6.0	-	-
Preventive Maintenance	5.9	7.1	6.5	5.9	1.0	8.5	-	-	8.3	7.0		6.7	-	-
Having Same Engineer Each Call	5.3	6.8	5.8	3.6	6.0	6.3	-	-	6.5	5.0		5.7	N/A	N/A
Remote Diagnostics	5.5	6.0	5.5	6.5	5.0	7.3	-	-	7.2	8.0		6.2	-	-
Uptime Guarantees	7.2	7.1	6.5	6.9	5.0	4.3	-	-	5.6	7.0		6.5	-	-
Having a Choice for Service	5.1	5.2	5.0	4.8	6.0	5.0	-	-	4.6	6.5		5.1	N/A	N/A

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

- Least significant issues include:
 - . Having the same engineer handle each call for datacommunications.
 - . Uptime guarantees for word processors.
 - . Having a choice for software maintenance.
- Systems availability demands and performance in Scandinavia are quite normal and range from a threshold of pain of 95.5% to the ideal of 98.8%. Actual performance falls in between at 97.1%. Details are shown in Exhibit E-5.
- Repair and response requirements and performance are shown in Exhibits E-6 and E-7. Actual response times in all product categories are well under the maximum acceptable time. This is also true for repair time, except that systems and applications software fix times are in excess of acceptable standards.

D. DESIRE FOR DIFFERENT CONTRACTS, WILLINGNESS TO AID SERVICER, AND WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

- Scandinavian users' desire for different service contracts is shown in Exhibit E-8. Most wanted is an annual invoice for large systems. Least wanted are more flexible contracts.
- Exhibit E-9 indicates users' moderate interest in helping maintenance vendors with service in exchange for a price concession. However small-systems users' willingness to replace boards is encouraging.

EXHIBIT E-5
SCANDINAVIAN RESPONDENTS' VIEW OF SYSTEM AVAILABILITY
(Percent)

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
<u>1983</u>												
Currently Get	96.6%	95.7%	97.0%	98.4%	95.0%	96.0%	-	-	98.2%	98.3%		97.1%
Ideal	99.2	98.6	97.9	99.6	99.0	96.5	-	-	99.2	98.8		98.8
TOP*	95.4	94.4	93.0	98.3	95.0	92.5	-	-	97.1	97.3		95.5

* TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Survey

EXHIBIT E-6
SCANDINAVIAN RESPONDENTS' VIEW OF REPAIR TIME
(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Get	1.9	3.1	2.7	1.7	3.0	1.3	-	-	5.7	7.3	3.1
Ideal	0.7	1.5	1.2	1.2	3.0	0.7	-	-	2.1	3.0	1.4
TOP*	4.0	5.7	8.3	2.9	8.0	6.7	-	-	4.3	5.1	5.4

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT E-7

SCANDINAVIAN RESPONDENTS' VIEW OF RESPONSE TIME
(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Get	1.5	4.3	5.5	2.3	8.0	3.3	-	-	4.5	7.5	4.2
Ideal	0.6	1.9	2.0	1.7	8.0	2.7	-	-	1.2	1.5	1.7
TOP*	4.1	6.4	6.4	2.8	24.0	8.2	-	-	3.5	8.3	5.5

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT E-8

SCANDINAVIAN USERS' DESIRE FOR DIFFERENT CONTRACTS

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Long-Term Contract	-	-	-	-	-	-	-	-	-	-	-
Automatic Renewal	5.3	5.5	4.4	4.8	-	4.0	-	-	4.9	4.0	4.9
Annual Invoicing	7.8	6.2	6.4	6.7	-	4.0	-	-	6.3	6.3	6.5
More Flexibility	4.0	3.9	3.7	4.1	-	4.0	-	-	4.6	5.0	4.1
Bundling*	7.4	6.1	6.4	6.5	-	4.3	-	-	5.0	6.3	6.2

Rating: 1 = Less Desirable, 10 = Very Desirable

*1 = Bundled, 10 = Unbundled

SOURCE: INPUT Survey

EXHIBIT E-9

SCANDINAVIAN USERS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT

HELP TO VENDOR	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Helping to Diagnose	5.4	5.5	5.4	6.1	-	5.5	-	-	5.3	7.0	5.6
Helping Replace Boards	5.9	7.0	6.6	6.8	-	4.7	-	-	-	-	6.7
Helping to Patch Software	4.8	5.6	5.7	3.9	-	1.7	-	-	3.6	4.7	4.7
Delivering Portable Machines to Repair Centres	6.1	5.9	6.9	5.9	-	1.0	-	-	-	-	6.2

Rating: 1 = Unwilling, 10 = Willing

SOURCE: INPUT Survey

- Exhibit E-10 establishes how much users value extra or improved vendor. Guaranteed uptime is the most popular and potentially lucrative maintenance revenue source. In the hypothetical but unlikely case of a vendor supplying all of the extra or improved services (guaranteed uptime, response time, and software turnaround time; software consulting and enhancements; and personalised service), added revenues could reach 40% to 50% of base maintenance.

E. PRICING

- Exhibit E-11 shows that Scandinavian users are currently getting an average maintenance increase of under 10%, well below the threshold of pain.
- Prices for service are considered to be too high, especially for peripherals and terminals, as shown in Exhibit E-12.

F. ATTITUDES AND DEMOGRAPHICS

- Exhibit E-13 graphically describes Scandinavian users' demographics and their attitudes towards service.
- Users are concerned about responsiveness, software service, and the high cost of service. A major criticism of Scandinavian service is fingerpointing, which takes place when one service firm blames another for a fault (e.g. a computer engineer points a finger at a telephone engineer).
- Other highlights of user attitudes towards service are:
 - No-maintenance discounts are offered in Scandinavia.

EXHIBIT E-10

SCANDINAVIAN USERS' WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Guaranteed Uptime	3.5	4.6	5.1	3.9	-	1.7	-	-	4.0	5.0	4.2
Guaranteed Response Time	3.6	3.4	3.0	4.1	-	3.3	-	-	4.4	4.3	3.7
Guaranteed Turnaround Time on Software	2.6	3.6	2.6	3.3	-	4.5	-	-	4.3	3.8	3.3
Software Consulting From Servicer	2.8	2.7	2.6	3.3	-	6.5	-	-	4.8	2.5	3.2
Software Enhancements From Servicer	2.3	2.7	3.2	-	-	-	-	-	5.2	2.7	3.1
Personalised Service	2.6	3.0	3.3	-	-	-	-	-	5.5	7.0	3.5

Rating: 1 = None, 2 = Up to 1% Basic Charge, 3 = Up to 5%, 4 = 10%, 5 = 15%

SOURCE: INPUT Survey

EXHIBIT E-11
SCANDINAVIAN RESPONDENTS' VIEW OF MAINTENANCE PRICING
(Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Received 1982	9.2%	8.3%	8.7%	-	-	-	-	-	10.2%	9.0%	9.6%
Expected 1983	2.4	2.6	2.8	-	-	-	-	-	3.9	6.0	9.1
TOP* 1983	9.7	10.3	8.8	-	-	-	-	-	10.5	10.0	15.8

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT E-12

SCANDINAVIAN RESPONDENTS' VIEW OF MAINTENANCE PRICING TERMS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Scandinavia
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Current Contract Prices:	7.5	7.4	10.0	-	-	-	-	-	6.4	6.3	7.0	
Current Hourly Rates:	8.8	6.6	7.2	-	-	-	-	-	7.7	8.7	7.5	
Extra Shift Rates:	8.0	7.7	8.0	-	-	-	-	-	7.3	7.0	7.7	
Software Support Rates:	7.5	6.3	7.4	-	-	-	-	-	7.1	5.0	6.9	

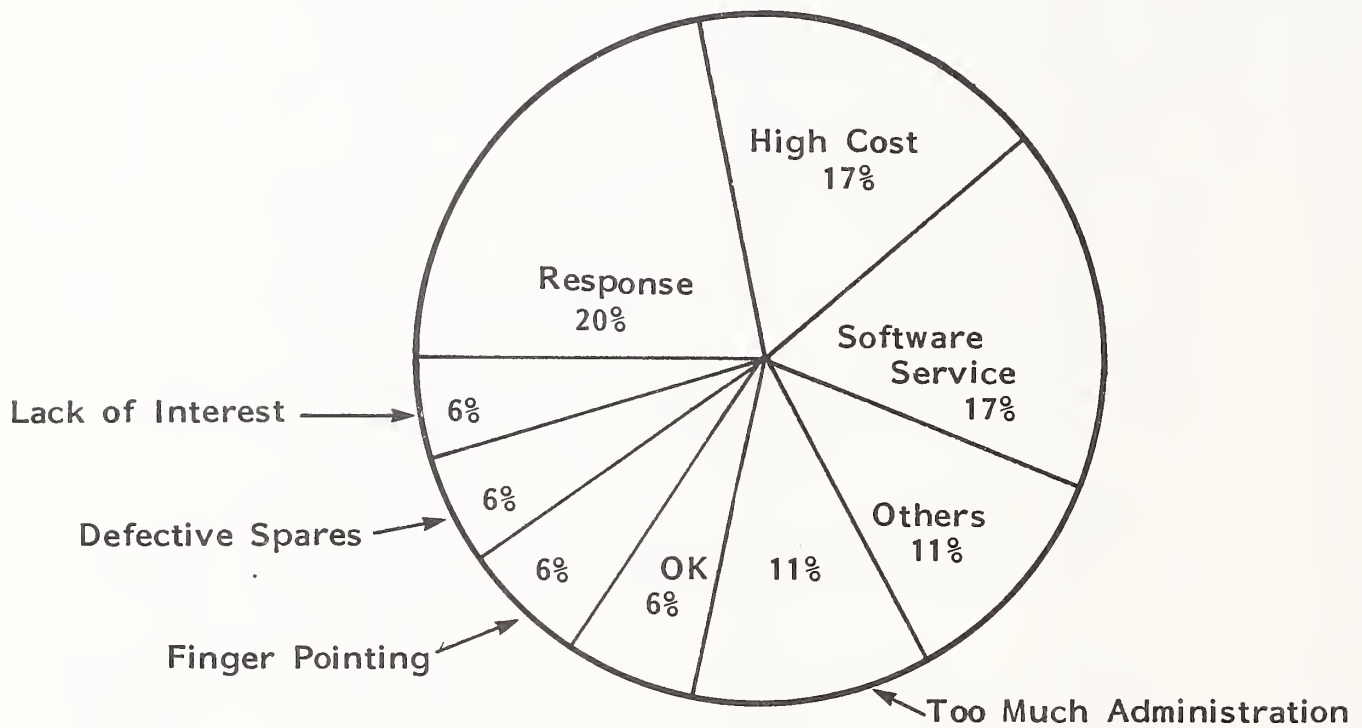
Rating: 1 = Too Low, 10 = Too High

SOURCE: INPUT Survey

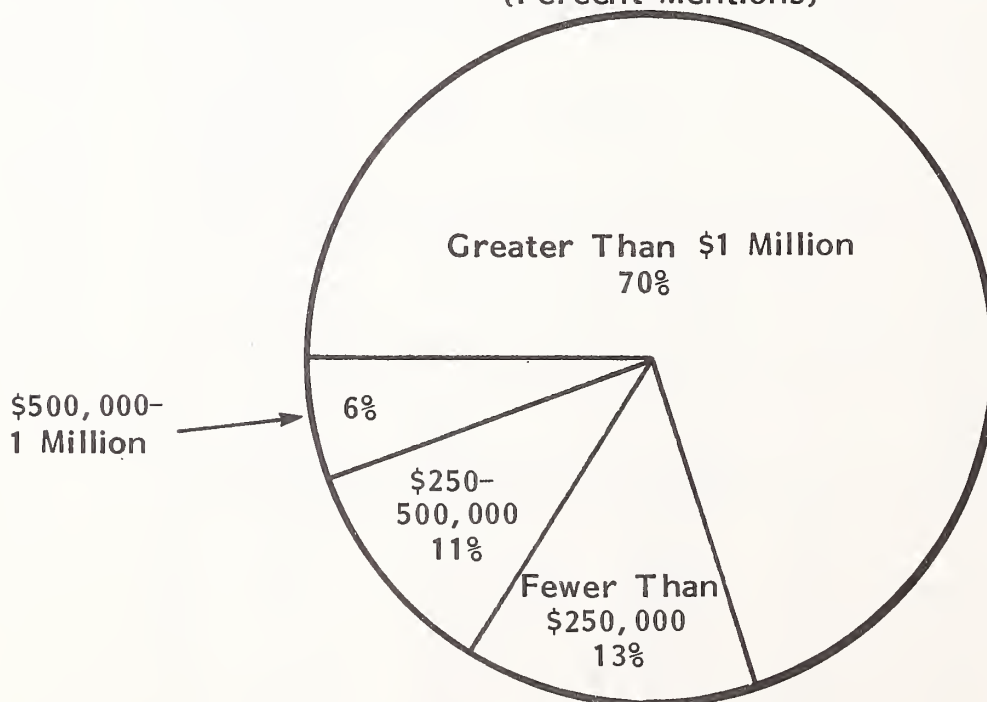
EXHIBIT E-13

DEMOGRAPHICS IN SCANDINAVIA

USER PERCEPTION OF WORST FEATURES OF MAINTENANCE
(Percent Mentions)



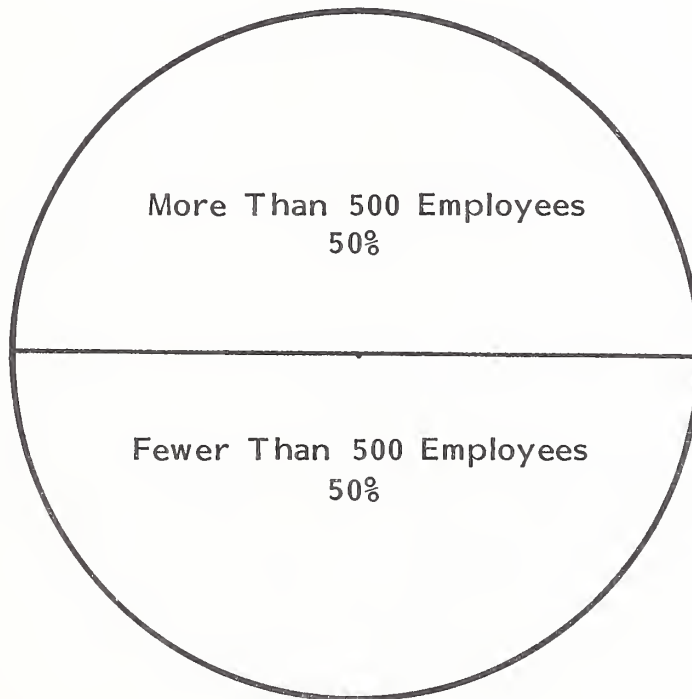
USER RESPONDENTS' 1983 INFORMATION SYSTEMS BUDGETS
(Percent Mentions)



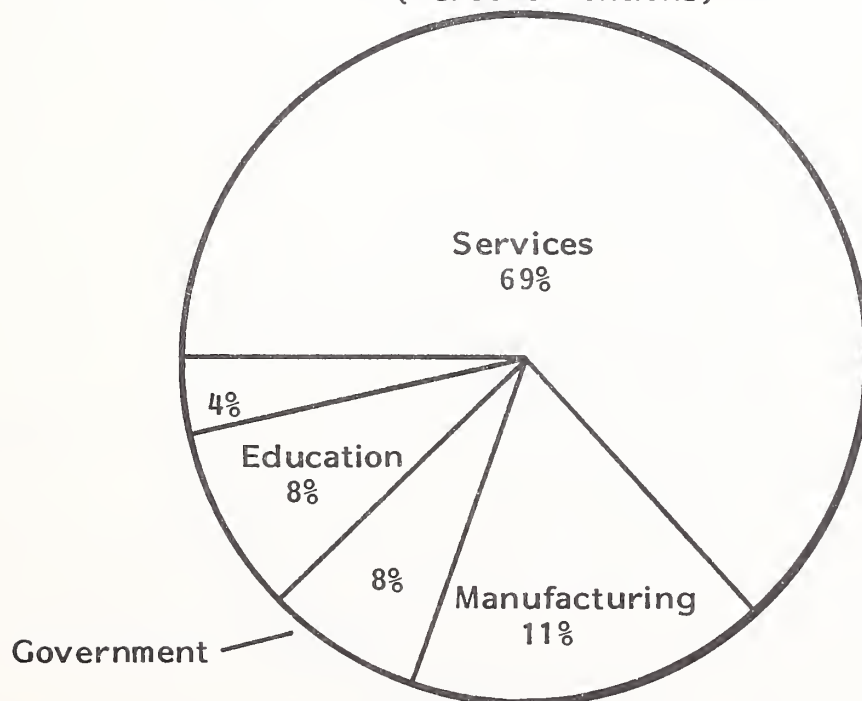
SOURCE: INPUT Survey
Continued

EXHIBIT E-13 (Cont.)

DEMOGRAPHICS IN SCANDINAVIA
USER RESPONDENTS BY SIZE OF COMPANY
(Percent Mentions)



USER RESPONDENTS BY BUSINESS TYPE
(Percent Mentions)

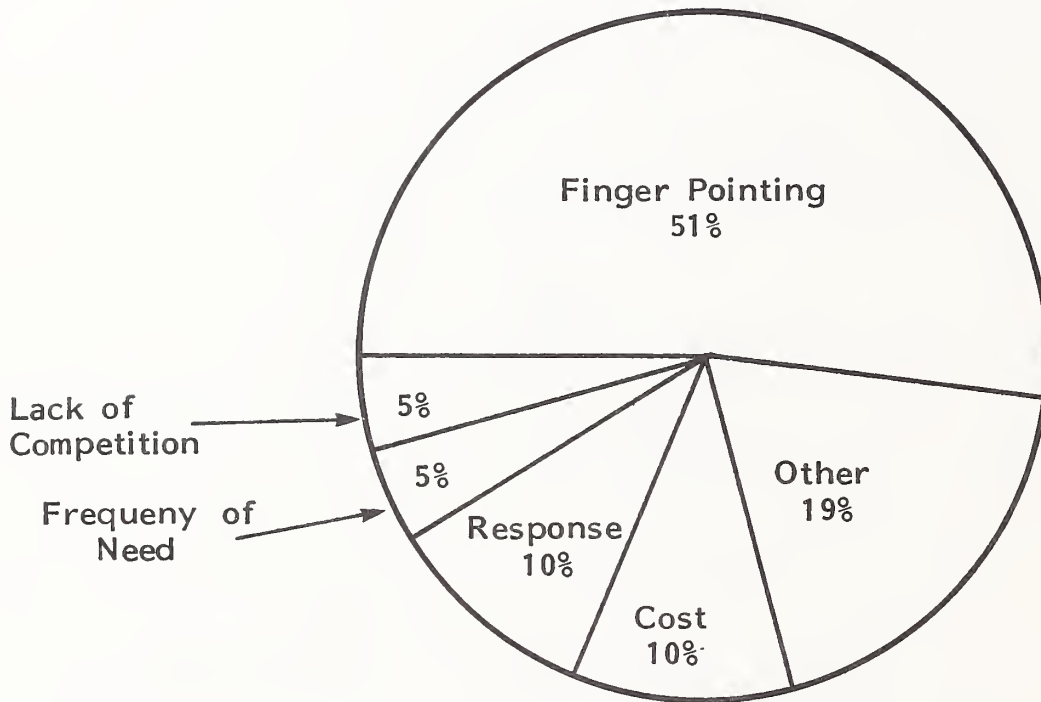


SOURCE: INPUT Survey
Continued

EXHIBIT E-13 (Cont.)

DEMOGRAPHICS IN SCANDINAVIA

USER COMPLAINTS ABOUT SERVICE
(Percent Mentions)



MAINTENANCE DISCOUNTS
(Percent Mentions)

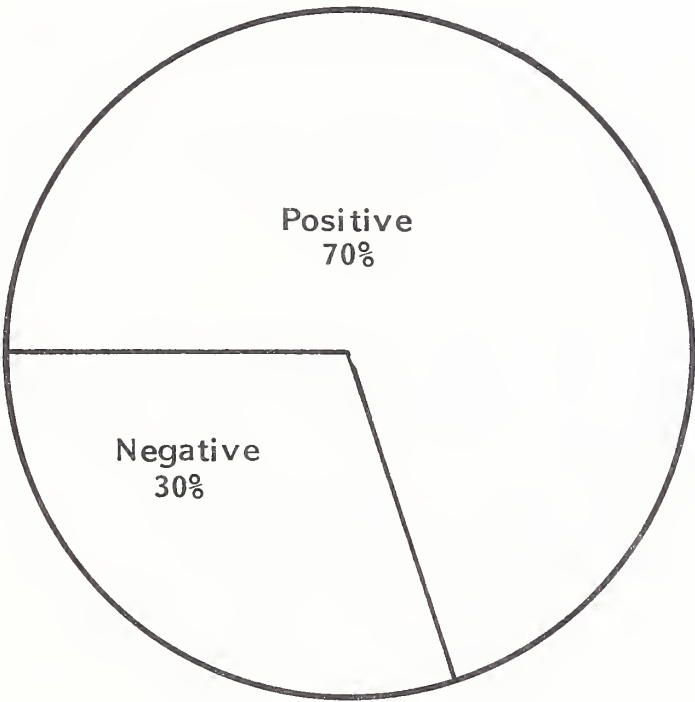


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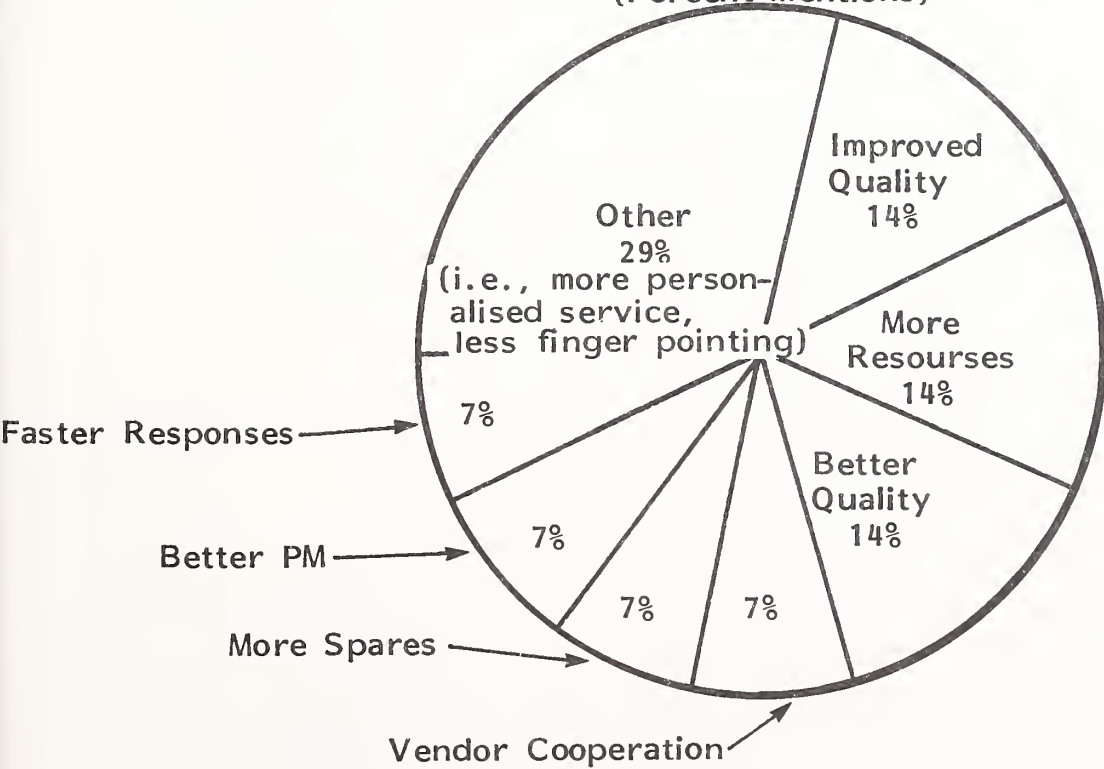
EXHIBIT E-13 (Cont.)

DEMOGRAPHICS IN SCANDINAVIA

USER ATTITUDES REGARDING PREVENTIVE MAINTENANCE
(Percent Mentions)



USER SUGGESTIONS FOR SERVICE IMPROVEMENT
(Percent Mentions)

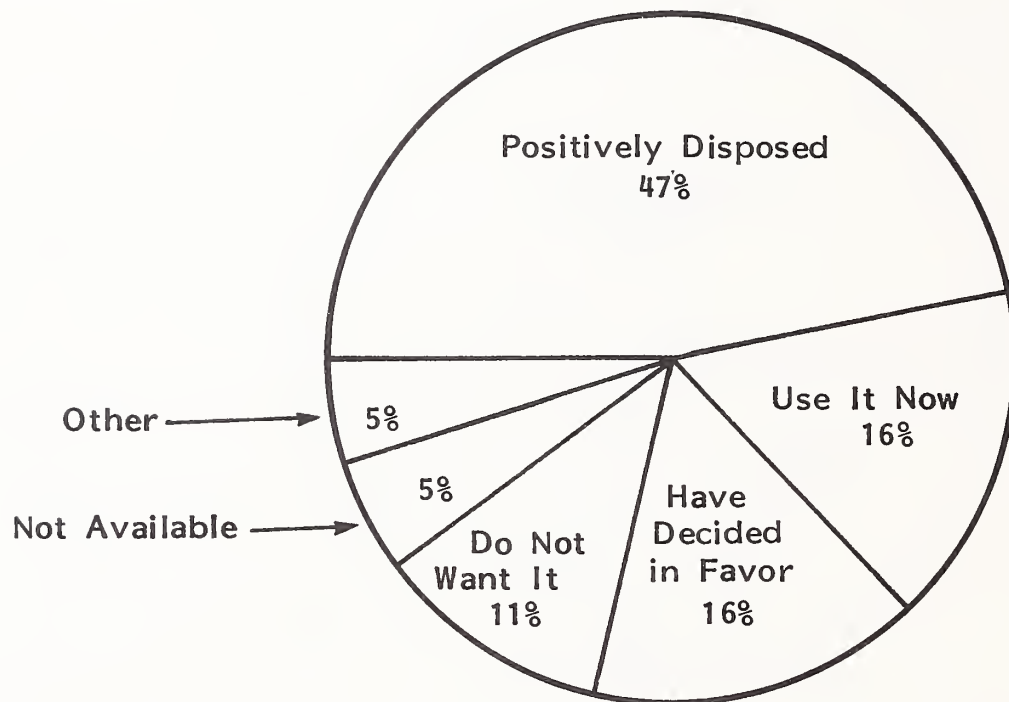


SOURCE: INPUT Survey
Continued

EXHIBIT E-13 (Cont.)

DEMOGRAPHICS IN SCANDINAVIA

USER ATTITUDE TOWARD REMOTE DIAGNOSTICS
(Percent Mentions)



SOURCE: INPUT Survey
Continued

- TPM is generally not available.
- Preventive maintenance proponents outnumber nonproponents seven to three.
- Users have a positive reaction to remote diagnostics.
- The typical Scandinavian user has an information systems budget greater than \$1 million and is in the services business. Half the companies employ less than 500 people.
- Scandinavian users enjoy personal contact from engineers and would like to see higher quality service and more resources.

APPENDIX F: ITALIAN USER DATABASE

APPENDIX F: ITALIAN USER DATABASE

A. COMMENTARY

- The Italian user database is characterised by the following:
 - Because of the formidable Italian inflation rate, Italy receives the highest maintenance price increases in Europe.
 - Copier maintenance service is below par with respect to other information processing equipment.
 - Datacommunications maintenance vendors can raise their prices to a greater extent than can vendors of other equipment maintenance.
 - Availability and service, in general, are adequate.
- Opportunities in the Italian market exist for:
 - TPM - 17% of users are interested and 37% don't know it exists.
 - Remote diagnostics, because they are of very low interest to users, require marketing efforts. Specialised contracts should be developed. Microcomputer carry-in service is not as acceptable as it should be, again requiring promotional efforts.

B. QUALITY OF SERVICE

I. VENDOR RATINGS BY USER

- Overall, IBM receives the highest ratings by Italian users. Least regarded are Burroughs and NCR. All ratings except two (NCR small systems (1.5) and IBM copiers (4)) were average or above. Exhibit F-1 displays by product category a summary of how users ranked vendors.
- Exhibit F-2 provides an analysis of user evaluations of installed equipment. The figures do not represent marketshare but do represent the equipment of user respondents.

2. QUALITY ATTRIBUTES

- Exhibit F-3 shows user quality ratings by attribute, that is, "overall quality," "quality of engineers," and so on.
 - Below-average scores are posted for:
 - Remote diagnostics - all systems, small system, peripherals and terminals, datacommunications, word processors, and systems software.
 - Preventive maintenance - datacommunications, PBAX, and copiers.
 - Quality of engineer - copiers.
 - Quality of service management - copiers.
 - Availability of spare parts - copiers.

EXHIBIT F-1

ITALIAN USER RANKING OF OVERALL VENDOR QUALITY

VENDOR	LARGE SYSTEMS	SMALL SYSTEMS	P & T	DATACOM	MICRO	WORD PROCESSING	PBAX	COPIER	SYSTEMS SOFTWARE
Burroughs	-	5.1	-	-	-	-	-	-	-
CDC	-	-	8.0	-	-	-	-	-	-
DEC	7.5	7.5	-	-	7.0	-	-	-	7.5
Honeywell	5.3	6.6	5.5	-	-	-	-	-	6.0
Hewlett- Packard	-	7.0	7.0	-	-	-	-	-	6.0
IBM	7.8	8.0	9.0	9.0	9.0	6.3	8.0	4.0	7.1
ICL	-	7.0	7.0	-	-	-	-	-	6.0
NCR	-	1.5	-	-	-	-	-	-	-
Philips	-	7.5	-	7.5	-	-	-	-	-
Sperry Univac	7.6	8.0	7.0	7.0	-	-	-	-	6.0
Olivetti	-	5.0	6.2	-	6.0	6.0	-	-	-
Commodore	-	-	-	-	8.0	-	-	-	-

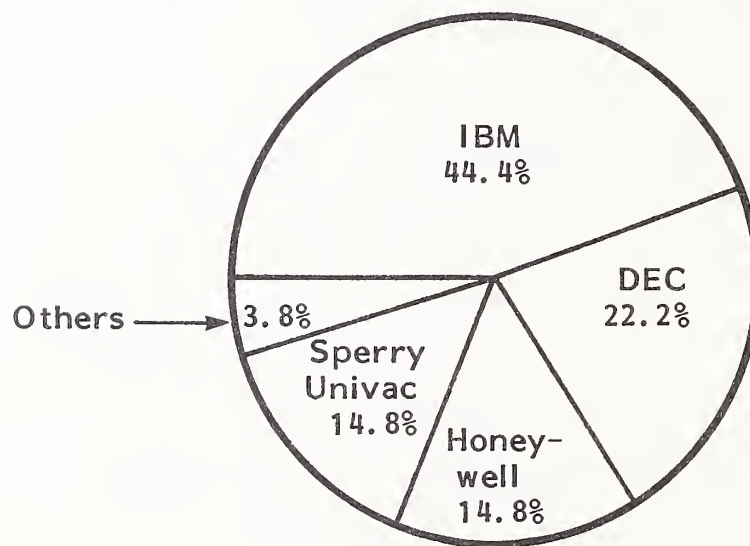
Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: User Survey

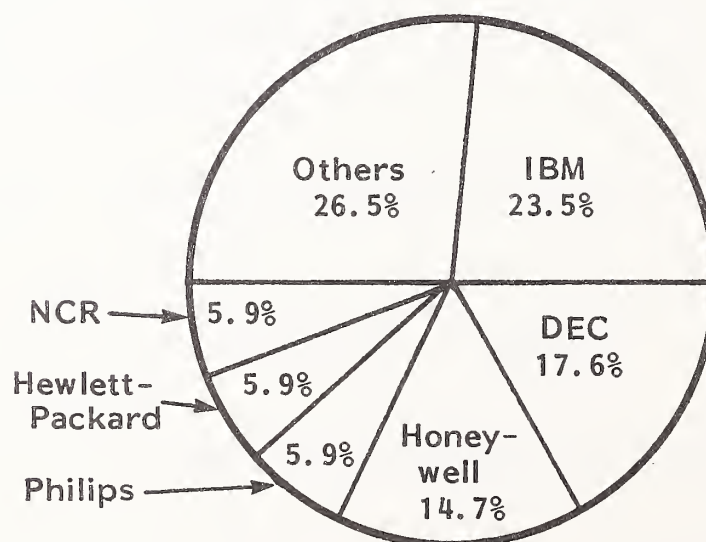
EXHIBIT F-2

ITALIAN USERS' INSTALLED EQUIPMENT

(Percent Using)



LARGE SYSTEMS



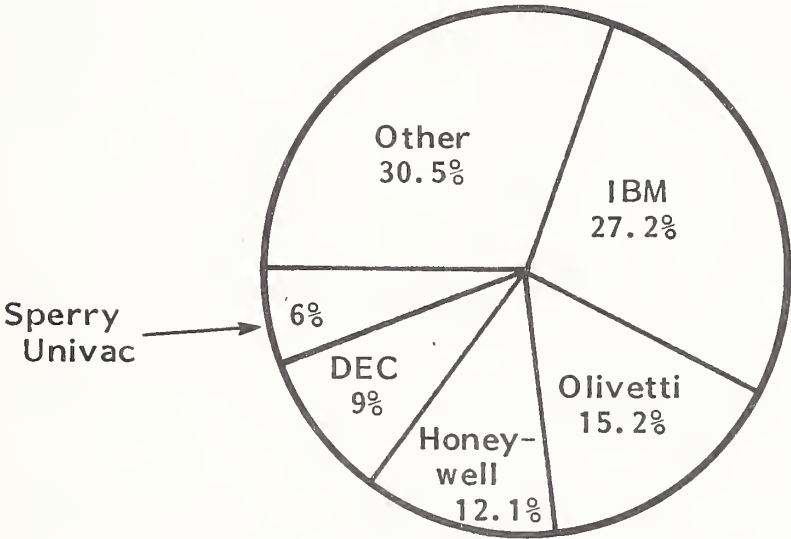
SMALL SYSTEMS

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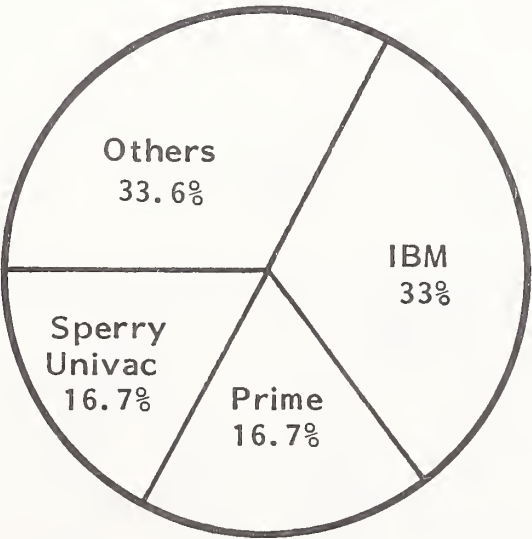
SOURCE: User Survey

EXHIBIT F-2 (Cont.)

ITALIAN USERS' INSTALLED EQUIPMENT
(Percent Using)



PERIPHERALS AND TERMINALS



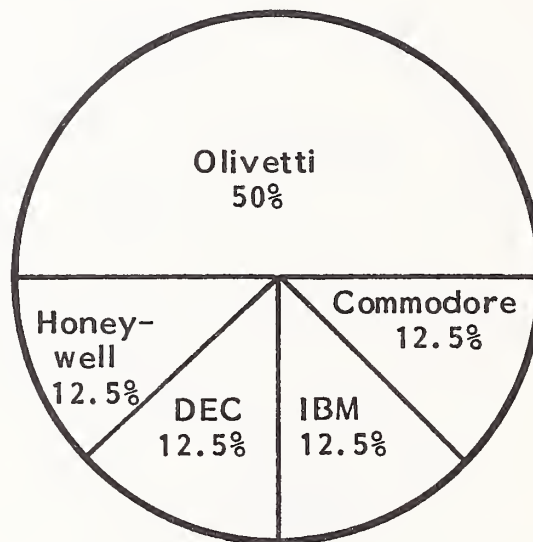
DATACOMMUNICATION

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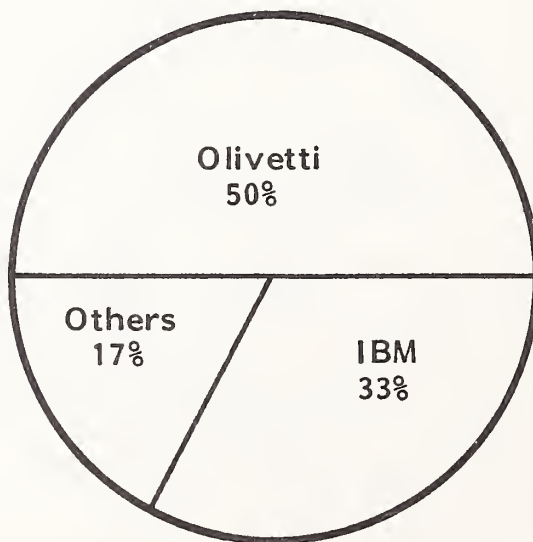
SOURCE: User Survey

EXHIBIT F-2 (Cont.)

ITALIAN USERS' INSTALLED EQUIPMENT
(Percent Using)



MICROCOMPUTERS



WORD PROCESSORS

SOURCE: User Survey

EXHIBIT F-3

ITALIAN USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE	QUALITY OF ENGINEERS	QUALITY OF SERVICE OF MANAGEMENT	AVAILABILITY OF SPARE PARTS	SOFTWARE SUPPORT CAPABILITY
All Systems 1983 1982 1981	6.8 7.0 -	6.8 7.3 -	6.6 6.6 -	7.5 7.4 -	5.8 - -
Large Systems	7.3	7.3	6.5	8.1	5.9
Small Systems	6.7	6.6	7.0	7.6	6.0
Peripherals and Terminals	7.0	7.0	6.9	8.0	5.3
Datacommunications	7.9	7.3	6.6	6.4	5.3
Personal Computers	-	-	-	-	-
Word Processors	6.1	6.0	6.1	6.6	5.1
Copiers	5.7	4.3	4.7	4.3	5.0
PBX	7.3	6.3	6.7	7.0	3.0
Systems Software	6.7	7.1	6.3	-	6.2
Applications Software	5.3	5.9	5.4	-	6.0

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey
Continued

EXHIBIT F-3 (Cont.)

USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS	REMOTE DIAGNOSTICS	QUALITY OF INFORMATION & COMMUNICATIONS	VALUE OF SERVICE COMPARED TO PRICE	QUALITY OF MARKETING & SALESPEOPLE	PRODUCT RELIABILITY
All Systems 1983 1982 1981	5.3 - -	4.6 5.2 -	6.1 5.9 -	6.3 5.6 -	6.1 - -	7.4 - -
Large Systems	6.0	5.6	6.2	6.9	6.0	7.7
Small Systems	5.6	4.0	6.1	6.1	5.6	8.1
Peripherals and Terminals	5.4	4.1	6.3	6.6	6.2	7.7
Datacommunications	3.8	4.8	6.1	6.7	6.4	7.3
Personal Computers	-	-	-	-	-	-
Word Processors	5.0	3.5	6.0	5.3	6.2	7.4
Copiers	4.3	5.0	3.5	4.7	5.3	4.7
PBX	2.0	-	5.0	5.7	6.0	7.7
Systems Software	5.0	4.4	6.2	6.1	6.1	6.7
Applications Software	7.5	6.0	5.4	6.1	7.0	5.8

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

- Quality of information and communciation - copiers.
 - Value of service compared to price - copiers.
 - Product reliability - copiers.
- Comparing 1983 rankings to those for 1982 on an all-systems basis, improvements were made in value of service compared to price, quality of information and communication, and availability of spare parts. Declines are noted in overall quality of engineers and remote diagnostics. The remaining quality attributes either stayed the same or else there was no data for comparison.

C. SERVICE ISSUES

- The relative importance of maintenance issues in Italy is shown in Exhibit F-4.
 - Highly important issues (above rating of 9) include:
 - Large-systems availability.
 - Datacommunications availability.
 - Datacommunications response time.
 - PBAX availability.
 - System software availability.
 - System software response time.

EXHIBIT F-4

ITALIAN USERS' RATING OF IMPORTANCE OF MAINTENANCE ISSUES

SERVICE ISSUES	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems In Italy		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	1983	1982	1981
Systems Availability	9.4	7.9	8.2	9.2	6.3	7.8	9.0	8.3	9.9	9.2	8.6	7.6	-
Response Time	8.6	8.0	8.1	9.4	6.5	6.9	8.0	8.3	9.0	8.6	8.3	8.3	-
Repair Time	8.2	8.3	7.9	8.4	6.7	7.1	8.7	6.7	8.3	8.4	8.0	8.7	-
Equipment Reliability	8.4	8.6	8.3	8.9	7.7	8.9	8.7	8.3	8.4	9.3	8.5	8.7	-
Software Maintenance	7.2	7.2	6.5	5.6	6.7	6.9	5.7	-	8.7	9.0	7.2	7.6	-
Price of Maintenance	6.7	7.3	6.8	4.7	6.7	6.8	6.7	4.7	6.2	6.3	6.6	7.3	-
Preventive Maintenance	5.1	5.8	5.1	3.3	4.2	3.8	4.7	7.0	4.8	4.5	5.0	4.9	-
Having Same Engineer Each Call	6.9	6.9	6.3	4.6	7.5	6.6	4.7	7.0	7.3	8.3	6.7	N/A	-
Remote Diagnostics	5.6	4.9	4.0	5.4	4.7	3.8	1.7	-	6.3	7.4	5.1	4.0	-
Uptime Guarantees	5.8	6.2	5.5	5.2	5.5	5.7	5.7	6.7	6.8	7.5	6.0	7.0	-
Having a Choice for Service	4.9	5.3	5.2	4.6	6.3	5.2	4.0	6.7	5.3	5.5	5.2	N/A	-

Rating: 1 = Unimportant, 5 = Neutral, 10 = Very Important

SOURCE: INPUT Survey

- Subneutral issues include:
 - . Small systems - remote diagnostics.
 - . Peripheral and terminals - remote diagnostics.
 - . Datacommunications - price of maintenance.
 - . Datacommunications - preventive maintenance.
 - . Datacommunications - having same engineer each call.
 - . Datacommunications - having a choice for service.
 - . Personal computer - remote diagnostics.
 - . Word processor - preventive maintenance.
 - . Word processor - remote diagnostics.
 - . Systems software - preventive maintenance.
 - . Applications software - preventive maintenance.
- 1983 ratings compared to 1982 show the increased importance of systems availability, preventive maintenance, and remote diagnostics. Issues with declining interest include: repair time, equipment reliability, software maintenance, and uptime guarantees.

D. AVAILABILITY, RESPONSE TIME, AND REPAIR TIME

- As shown in Exhibit F-5, the perceived actual, ideal, and minimum acceptable values for systems availability decreased from 1981 to 1983.
 - Other products have similarly shown a drop in systems availability between 1982 and 1983.
 - In every instance current performance is below the desired ideal but better than the minimum acceptable.
 - This degradation of performance is perplexing and difficult to understand. Because the same trend occurs in each product category, one explanation of this odd phenomenon might be that as more systems of varying types are installed, the performance of any one group becomes less critical.
- Response times are unusually lengthy in Italy. This reflects a difficulty in getting to the site and a lack of resources. However, Italian users have grown accustomed to this and, with the exception of word processors, copiers, and systems software, believed that actual response is better than the minimum acceptable. Details are shown in Exhibit F-6.
- Likewise, repair times are nearly inordinate, but in several product categories they are better than the maximum acceptable. Exceptions (categories where actual perceived repair time is in excess of the maximum acceptable) include large and small systems, and systems and applications software. Details are shown in Exhibit F-7.

EXHIBIT F-5
ITALIAN RESPONDENTS' VIEW OF SYSTEM AVAILABILITY
(Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Get	89.0%	86.9%	88.4%	84.1%	85.0%	90.2%	98.6%	73.3%	91.2%	90.0%	87.9%
Ideally Would Like	95.7	95.1	95.2	92.2	92.1	97.7	99.6	96.0	97.3	98.8	95.5
TOP*	86.6	80.9	85.1	83.6	85.4	89.6	97.5	76.7	84.3	90.8	84.8
<u>1982</u>											
Currently Got	93.5	98.8	90.8	N/A	N/A	97.7	N/A	N/A	96.4	94.3	-
Expected 1982	97.8	99.6	97.7	N/A	N/A	99.0	N/A	N/A	99.5	99.5	-
TOP*	92.3	96.6	93.8	N/A	N/A	96.7	N/A	N/A	97.2	98.7	-
<u>1981</u>											
Currently Got	98.1	97.4	98.1	N/A	N/A	94.4	N/A	N/A	97.8	92.9	-
Expected 1981	99.2	99.1	99.1	N/A	N/A	96.0	N/A	N/A	99.2	98.9	-
TOP*	96.0	95.5	95.8	N/A	N/A	94.6	N/A	N/A	97.0	96.1	-

* TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Survey

EXHIBIT F-6
ITALIAN RESPONDENTS' VIEW OF RESPONSE TIME
(Hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Get	3.7	12.0	11.2	6.3	10.0	5.8	4.7	21.3	17.9	8.8	10.1
Ideal	1.4	7.4	5.0	2.0	4.2	2.3	1.7	3.7	3.0	6.7	4.2
TOP*	6.8	13.4	20.1	12.3	10.2	4.3	5.0	8.7	7.8	9.0	11.8

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

EXHIBIT F-7

ITALIAN RESPONDENTS' VIEW OF REPAIR TIME (hours)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Currently Get	3.0	6.7	4.6	3.3	2.8	2.8	3.0	4.0	20.9	6.0	6.1
Ideal	1.6	5.9	3.0	1.3	1.9	1.6	1.3	2.3	2.9	3.8	3.1
TOP*	1.9	6.6	7.2	8.3	7.2	3.7	10.0	12.0	6.5	4.2	6.9

* TOP = Threshold of Pain (Maximum Acceptable)

SOURCE: INPUT Survey

E. DESIRE FOR DIFFERENT CONTRACTS

- Exhibit F-8 illustrates Italian users' desire for different maintenance contracts. Copier users desire more contract flexibility and bundled contracts.
- Overall, there is an above-average interest in new maintenance contracts. Bundling is most desirable, and annual invoicing is least desirable (but annual invoicing still attracts above-average interest).

F. WILLINGNESS TO AID SERVICER

- There is a moderate degree of interest in helping the service vendor, provided that a discount is offered, as shown in Exhibit F-9. Users seem most willing to help deliver portable equipment to repair centres (especially in the peripherals, datacommunications, and copier product lines).
- Carry-in service for personal computers received a low rating of 4.5.

G. WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

- Exhibit F-10 shows that Italian users are willing to pay up to four and one-half percent of the base maintenance charge as a premium for getting better service. Most popular of the better service ideas are guaranteed uptime and guaranteed response time. Software consulting services are least attractive in terms of new revenue possibilities for service firms.
- Customers using copiers and software are willing to pay between 5% and 10% for improved service.

EXHIBIT F-8

ITALIAN USERS' DESIRE FOR DIFFERENT CONTRACTS

	SYSTEMS					OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications		
Long-Term Contract Automatic Renewal Annual Invoicing More Flexibility Bundling*	4.5	4.5	4.8	5.8	6.0	5.5	8.0	7.3	7.4	6.8	6.5	
	5.5	4.6	4.6	6.9	5.3	5.0	6.3	5.7	4.3	5.0	6.8	
	4.0	5.2	5.0	4.8	6.2	4.0	5.7	7.0	4.9	5.3	6.0	
	7.4	6.9	7.8	7.8	8.8	8.7	6.3	10.0	7.2	8.2	9.0	
	6.1	6.3	6.4	7.1	5.6	5.0	6.7	10.0	5.6	6.0	9.4	

Rating: 1 = Less Desirable, 10 = Very Desirable

* 1 = Bundled, 10 = Unbundled

SOURCE: INPUT Survey

EXHIBIT F-9

ITALIAN USERS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT

HELP TO VENDOR	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Helping to Diagnose	7.6	7.8	7.2	7.6	6.2	5.3	7.0	7.0	7.7	7.5	5.3
Helping Replace Boards	5.8	5.5	6.1	5.8	6.5	3.6	5.3	-	-	-	5.0
Helping to Patch Software	5.9	6.1	5.0	3.3	4.0	1.9	1.0	-	5.5	6.0	4.9
Delivering Portable Machines to Repair Centres	4.8	4.7	6.5	7.1	4.5	3.9	4.0	-	-	-	7.6

Rating: 1 = Unwilling, 10 = Willing

SOURCE: INPUT Survey

EXHIBIT F-10

ITALIAN USERS' WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Guaranteed Uptime	2.5	3.1	2.5	3.1	3.0	2.2	3.0	3.5	3.8	4.2	2.9
Guaranteed Response Time	2.6	2.6	2.2	2.9	2.8	2.0	2.7	3.3	3.5	4.0	2.7
Guaranteed Turnaround Time on Software	2.2	2.2	2.3	2.8	3.2	2.3	2.7	-	3.4	4.0	2.6
Software Consulting From Servicer	1.9	2.3	2.3	2.8	2.5	2.1	2.3	-	3.6	3.8	2.5
Software Enhancements From Servicer	2.4	2.3	2.1	3.1	3.2	2.5	1.0	-	3.4	4.0	2.6
Personalised Service	1.0	2.8	2.7	2.9	2.8	2.5	1.0	3.3	3.4	3.0	2.6

1 = None, 2 = Up to 1% basic charge, 3 = Up to 5%, 4 = 10%, 5 = 15%.

SOURCE: INPUT Survey

H. PRICING AND TERMS

- As shown in Exhibit F-11, Italian users are paying relatively high maintenance prices and are expecting relatively high increases. This correlates with Italy's higher rate of inflation.
- In all product categories except personal computers, the ideal expected price increase expected is in between the perceived actual (lower) and the threshold of pain (higher).
- As shown in Exhibit F-12, Italian users are not unusually concerned about maintenance prices. Prices are perceived as too high for small-systems base service cover, applications software hourly rate and service cover, and PABX basic rate and copier hourly rate charges.

I. ATTITUDES AND DEMOGRAPHICS

- Exhibit F-13 provides feedback from Italian users relating to their attitudes about service and company information. Significant conclusions from this data are as follows:
 - Users are concerned about the lack of capability in service, software service, and repair time. They are also concerned about quality cost and response.
 - Almost everyone (93%) pays list price for service.
 - Preventive maintenance believers outnumber disbelievers by 56 to 44.
 - The majority of users (63%) are positive towards remote diagnostics.

EXHIBIT F-11
ITALIAN RESPONDENTS' VIEW OF MAINTENANCE PRICING
(Percent)

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
<u>1983</u>											
Received 1982	12.5%	10.8%	12.4%	10.1%	12.5%	10.0%	11.7%	10.0%	12.9%	7.5%	11.5%
Expected 1983	13.6	11.7	13.2	11.8	12.3	10.4	14.0	11.7	13.2	9.8	12.4
TOP* 1983	19.2	17.0	17.5	17.9	19.4	17.9	25.3	15.0	17.4	16.8	17.9

* TOP = Threshold of Pain (Minimum Acceptable)

SOURCE: INPUT Survey

EXHIBIT F-12

ITALIAN RESPONDENTS' VIEW OF MAINTENANCE PRICING TERMS

	SYSTEMS				OFFICE PRODUCTS				SOFTWARE		All Systems in Italy
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Micro Computer	Word Processor	PBAX	Copier Fax	Systems	Applications	
Current Contract Prices:	6.7	8.5	7.3	5.4	5.8	6.5	8.3	7.5	7.4	8.2	7.3
Current Hourly Rates:	7.1	7.6	7.0	6.3	6.2	5.6	7.3	8.0	6.8	8.0	7.0
Extra Shift Rates:	-	6.8	-	-	-	-	-	-	-	-	6.8
Software Support Rates:	-	7.9	-	-	-	-	-	-	-	-	6.9

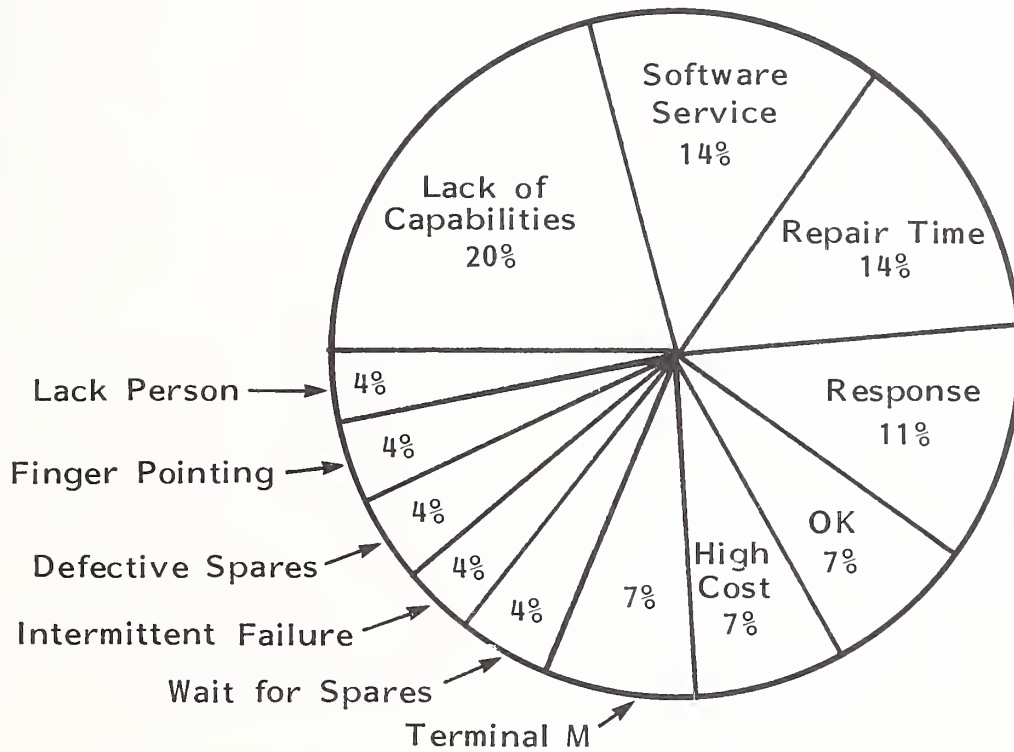
SOURCE: INPUT Survey

Rating: 1 = Too Low, 10 = Too High

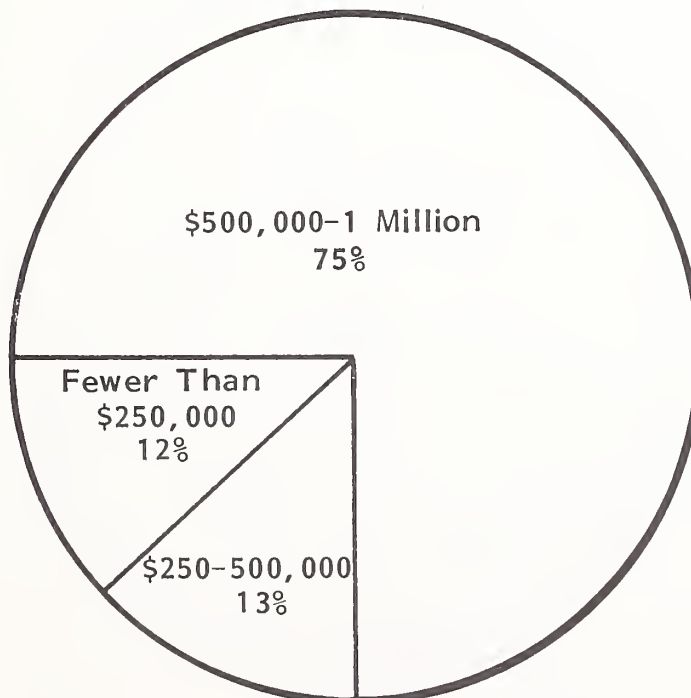
EXHIBIT F-13

DEMOGRAPHICS IN ITALY

USER PERCEPTION OF WORST FEATURES OF MAINTENANCE
(Percent Mentions)



USER RESPONDENTS' 1983 INFORMATION SYSTEMS BUDGETS
(Percent Mentions)

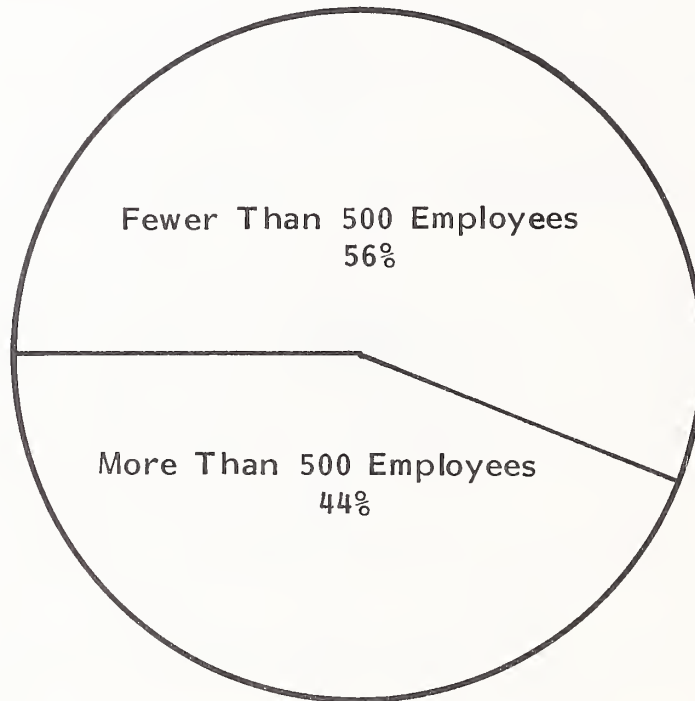


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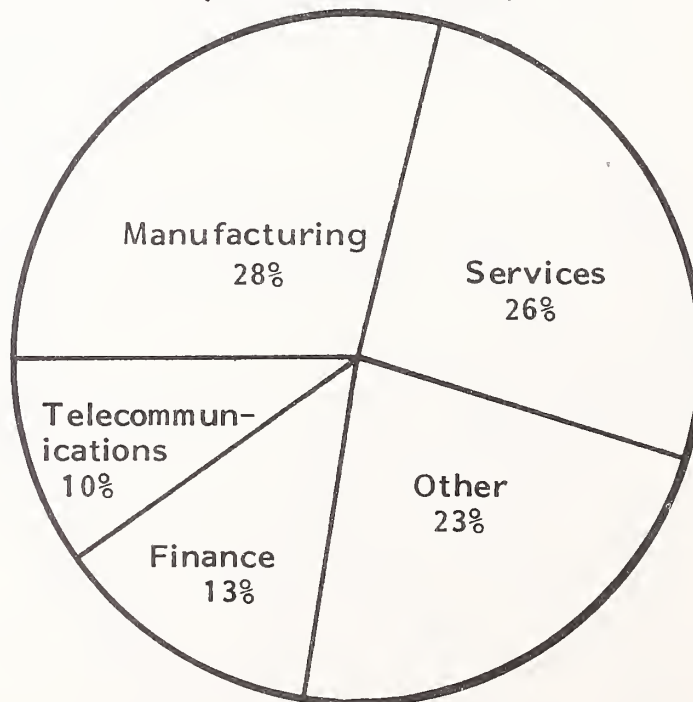
EXHIBIT F-13 (Cont.)

DEMOGRAPHICS IN ITALY

USER RESPONDENTS BY SIZE OF COMPANY
(Percent Mentions)



USER RESPONDENTS BY BUSINESS TYPE
(Percent Mentions)

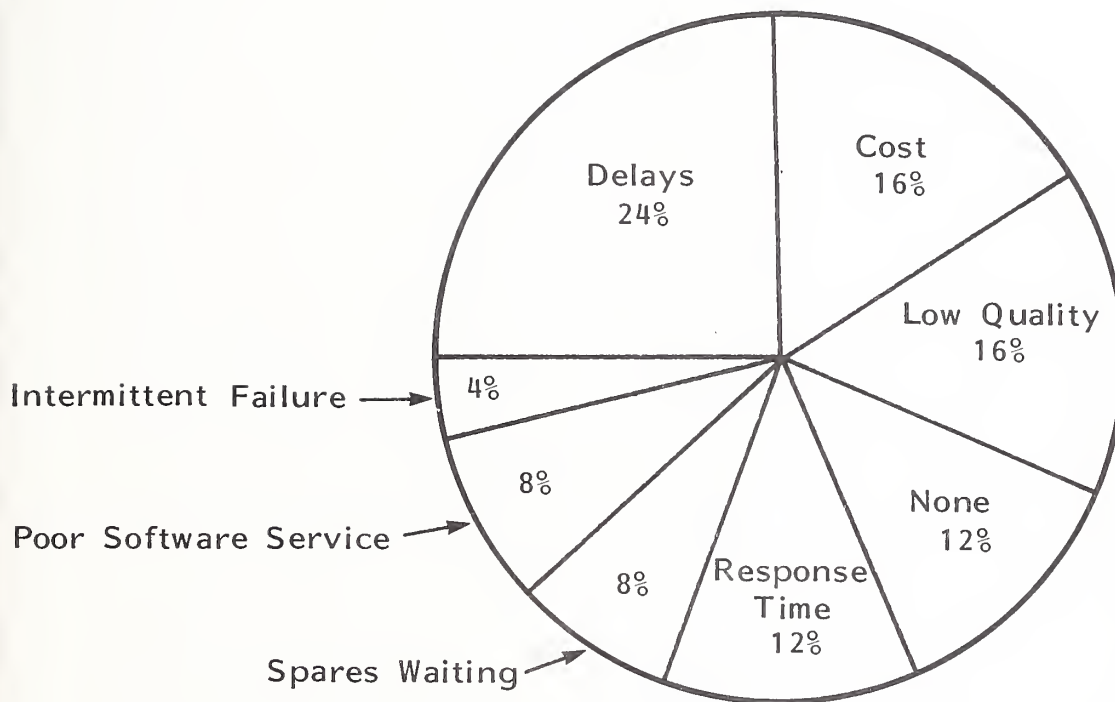


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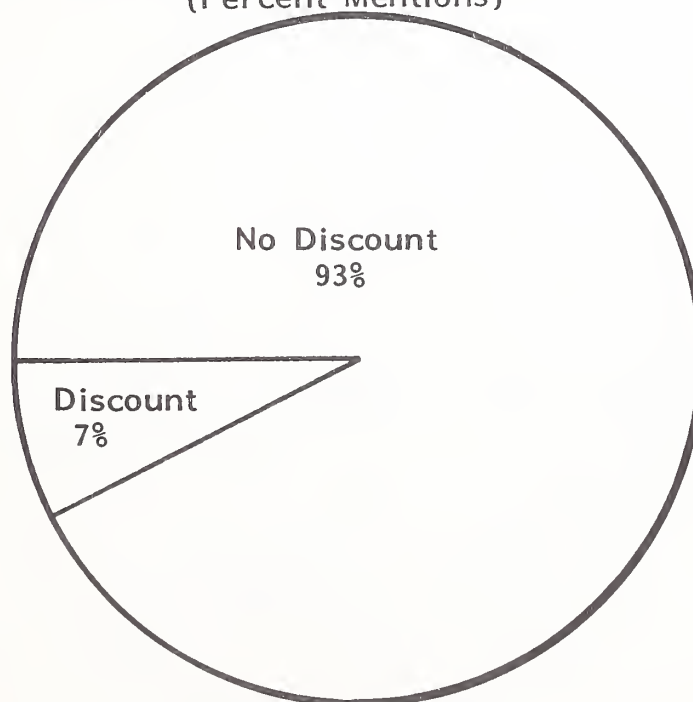
EXHIBIT F-13 (Cont.)

DEMOGRAPHICS IN ITALY

USER COMPLAINTS ABOUT SERVICE
(Percent Mentions)



MAINTENANCE DISCOUNTS
(Percent Mentions)

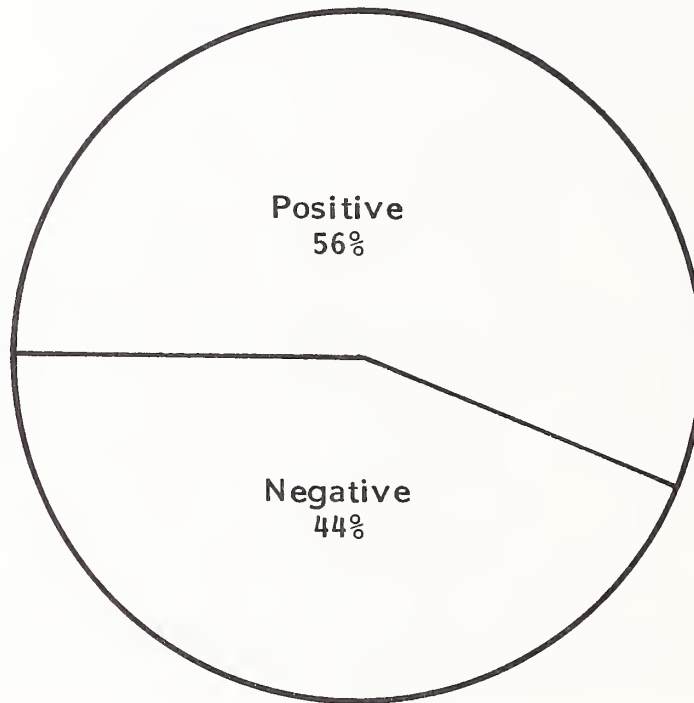


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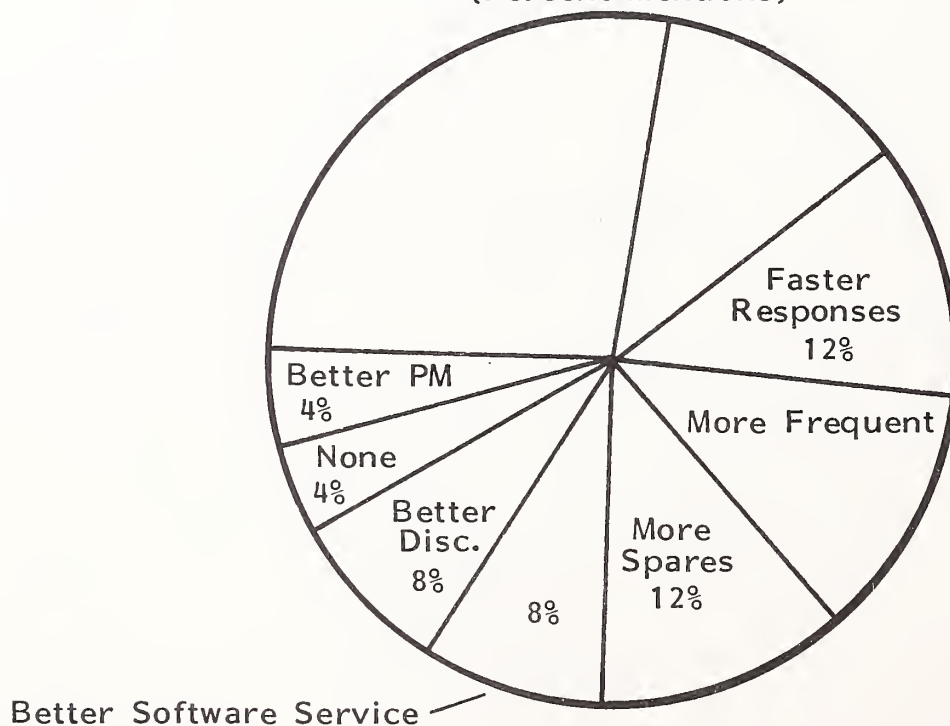
EXHIBIT F-13 (Cont.)

DEMOGRAPHICS IN ITALY

USER ATTITUDES REGARDING PREVENTIVE MAINTENANCE
(Percent Mentions)



USER SUGGESTIONS FOR SERVICE IMPROVEMENTS
(Percent Mentions)

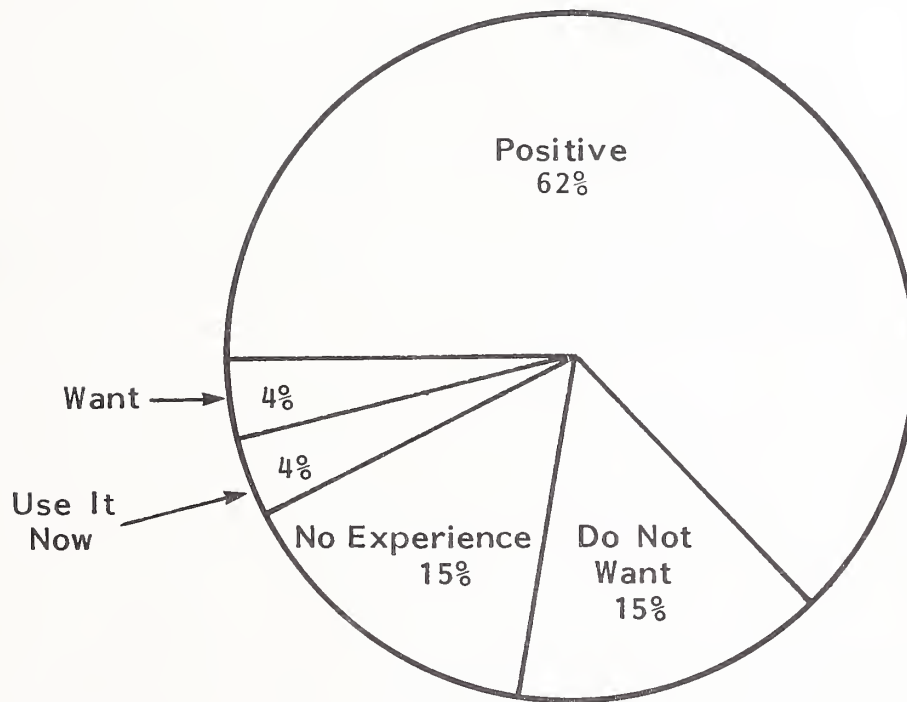


SOURCE: INPUT Survey
Continued

EXHIBIT F-13 (Cont.)

DEMOGRAPHICS IN ITALY

USER ATTITUDE TOWARD REMOTE DIAGNOSTICS
(Percent Mentions)



SOURCE: INPUT Survey

- Seventeen percent of Italian users are interested in TPM.
- Demographically, Italian users tend to use companies that:
 - . Employ less than 500 employees.
 - . Are in the manufacturing and services business.
 - . Have an information systems budget of one-half to one million dollars per annum.

APPENDIX G: VENDOR QUESTIONNAIRE

VENDOR QUESTIONNAIRE

1983 INPUT FIELD SERVICE SURVEY - VENDORS

1. Please, objectively rate QUALITY OF SERVICE PROVIDED BY YOUR FIRM:
1 = Low 5 = Average 10 = Excellent

QUALITY OF SERVICE	P R O D U C T C L A S S I F I C A T I O N (as applicable)												SOFTWARE	
	SYSTEMS					OFFICE PRODUCTS					Other	System	Applic	
	Large Systems	Small Systems	Peripherals & Terminals	Data Commu- nications	Personal Computer	Word Proc.	Work Stations	PBAX	Copier Fax					
Overall quality of service														
Quality of engineers														
Quality of service management														
Availability of spare parts														
Software support capability														
Preventive maintenance effectiveness														
Remote diagnostics														
Quality of Information and communication														
Value of service compared to price														
Quality of marketing and salesmen														
Product reliability														

2. Please rate IMPORTANCE OF SERVICE ISSUES BY YOUR FIRM:
 1 = Unimportant 5 = Neutral 10 = Very Important

IMPORTANCE OF SERVICE ISSUES	P R O D U C T C L A S S I F I C A T I O N										
	SYSTEMS			OFFICE PRODUCTS					SOFTWARE		
	Large Systems	Small Systems	Peripherals & Terminals	Data Commu- nications	Personal Computer	Word Proc.	Work Stations	PBAX	Copier Fax	Other	System Applic.
Systems availability											
Response time											
Repair time											
Equipment reliability											
Software maintenance											
Price of maintenance											
Preventive maintenance											
Having same engineer each call											
Remote diagnostics											
Up-time guarantees											
Having a choice for service											

3. Please rate SYSTEM AVAILABILITY PROVIDED BY YOUR FIRM (in Percent)

SYSTEM AVAILABILITY (in Percent)	P R O D U C T C L A S S I F I C A T I O N										
	S Y S T E M S			O F F I C E P R O D U C T S					S O F T W A R E		
	Large Systems	Small Systems	Peripherals & Terminals	Data Commu- nications	Personal Computer	Word Proc.	Work Stations	PBAX	Copier Fax	Other	System Applic.
What are you currently providing											
What ideally would you like to provide											
What is the minimum your users would accept											

4. Please rate RESPONSE TIME PROVIDED BY YOUR FIRM (in Hours from 1st call)

<u>RESPONSE TIME</u>											
What are you currently providing											
What ideally would you like to provide											
What is the longest your user can wait											

5. Please rate REPAIR TIME BY YOUR FIRM (in Hours from arrival)

<u>REPAIR TIME</u>											
What is the current repair time											
Ideally what should it be											
What is the maximum time your user would accept											

6. Please rate NUMBER OF NO FAULTS FOUND (in Percent of Total Calls)

NUMBER OF NO FAULTS FOUND (in % of Total Calls)	P R O D U C T C L A S S I F I C A T I O N										
	S Y S T E M S			O F F I C E P R O D U C T S					S O F T W A R E		
	Large Systems	Small Systems	Peripherals & Terminals	Data Commu- nications	Personal Computer	Word Proc.	Work Stations	PBAX	Copier Fax	Other	System Applic.
Current											
Ideally what should it be											

7. Please rate NUMBER OF REPEAT CALLS (in Percent of Total Calls)

Current											
Ideally what should it be											

8. Please rate YOUR WILLINGNESS TO PROVIDE DIFFERENT CONTRACTS:

1 = Unwilling 10 = Willing

Long term contract											
Automatic renewal											
Annual invoicing											
More flexibility											
Bundled = 1 Unbundled = 10											

9. Please rate DISCOUNTS YOU WOULD ALLOW FOR USER ASSISTANCE (in Percent of base maintenance)

DISCOUNTS YOU WOULD ALLOW FOR USER ASSISTANCE (in % of base maintenance)	C L A S S I F I C A T I O N										
	P R O D U C T			S Y S T E M S				O F F I C E P R O D U C T S			
	Large Systems	Small Systems	Peripherals & Terminals	Data Communications	Personal Computer	Word Proc.	Work Stations	PBAX	Copier Fax	Other	SOFTWARE
Helping to diagnose											
Helping replace boards											
Helping to patch software											
Delivering portable machines to repair centres											

10. Please rate ESTIMATED PREMIUMS YOU WOULD EXPECT FOR EXTRA/IMPROVED SERVICE (in Percent of base maintenance)

1 = None 2 = Up to 1% basic charge 3 = Up to 5% 4 = 10% 5 = 15%

Guaranteed up-time											
Guaranteed response time											
Guaranteed turnaround on software time											
Software consulting from servicer											
Software enhancements from servicer											
Personalised servicer											

11. Please rate PRICING BY YOUR FIRM:

PRICING	P R O D U C T C L A S S I F I C A T I O N										S O F T W A R E		
	S Y S T E M S					O F F I C E P R O D U C T S					S Y S T E M		A p p l i c .
	Large Systems	Small Systems	Peripherals & Terminals	Data Commu- nications	Personal Computer	Word Proc.	Work Stations	PBAX	Copier Fax	Other	System	System	
Percent increase last year													
Percent increase expected this year													
Percent that would be unacceptable to user													
Percent current annual maintenance to hardware price													
Hourly rate													
Seasonal shift premium charge (in Percent of base maintenance)													
Third shift premium charge (in Percent of base maintenance)													

12. Please rate your success at implementing the following during 1982: 1 = Low, 10 = High P = Planned, I = Implemented/no data N = Not implemented	
	RATING
Recruiting of Field Service Engineers	
Training of Field Service Engineers	
Reducing Labor Turnover	
Improving Product Quality	
Quality of Service	
Providing Remote Diagnostic Program	
Meeting Customer Demands	
Developing New Revenues	
Living with Budget Limitations	
Providing Competitive Salary/Compensation	
Reducing Spare Parts Shortages	
Marketing Field Service	
Improving Service Image (Promoting Professionalism)	

13. Please rate (1 to 5) the field service involvement and influence in the following issues: 1 = Low 10 = High		
	1981	1982
Equipment Specification		
Equipment Design		
Built-in Diagnostics		
Spares Requirements and Levels		
Geographic Marketing Control		
Order Acceptance Sign-Off		
Contractual Terms and Conditions		
Acceptability of Site Environment		
User Education		
Selling of Field Service		
Pricing of Field Service		

14. Please rate the following in terms of the amount of field service management you currently pay. (1 = Low, 10 = High)

AREA	RATING
. System Availability	
. Response Time	
. Repair Time	
. Preventive Maintenance	
. Remote Diagnostics	
. Price of Maintenance	
. Stability of Engineer Population	
. Uptime Guarantees	
. Equipment Reliability	
. Support Centers	
. Software Maintenance	
. Flexible Contracts	
. User Self-Maintenance	
. Union Avoidance	
. Other Repair Depots (including mail-in)	
. Other	
. Development of New Revenue	
. Quality of Service	
. Improving Service Image	
. Improving Influence of Field Service	

15. With regard to spare parts, do you:

☐ Expense low-cost parts (less than \$ _____)

16. Please complete as applicable:

SALARY INFORMATION	DOLLAR RANGE		AVERAGE SALARY	% INCREASE OVER LAST YEAR
	FROM	TO		
Trainee				
Qualified Field Engineer				
Senior Field Engineer				
Hardware Support Engineer				
Software Support Engineer				
Supervisor				
Line Manager				

17. Please complete as applicable:

COST BREAKDOWN OF A TYPICAL FAULT CALL	
COMPONENT	
Average Cost (\$)	
Direct Labor (Percent)	
Travel Labor (Percent)	
Parts and Material (Percent)	
Travel Expense (Percent)	
Burden & Overhead(%)	
Average No. of Calls Per Wk/Per Engineer	

18. What is or will be the impact on your organisation from the influx of micro computers? <hr/> <hr/> <hr/> <hr/> <hr/>	19. Approximately what are your total revenues for maintenance? <div style="text-align: center; margin-bottom: 10px;"> Hardware Software </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> 1983 1984 1985 </div> <div style="width: 60%;"> <hr/><hr/><hr/><hr/><hr/> </div> </div> 1983 % Field Service Revenues of Total Co. Revenue _____ % 1984 _____	20. What is your strategy for providing remote diagnostics? <hr/> <hr/> <hr/> <hr/> <hr/>
21. How has the rate of the engineer changed in your organisation? <hr/> <hr/> <hr/> <hr/>	22. What is your firm's profit objective for field service? (current & projected profit before tax percent, philosophies, etc) <hr/> <hr/> <hr/> <hr/>	23. What is the most significant service issue currently? <hr/> <hr/> <hr/> <hr/>
24. What steps have you taken to protect or enhance service revenues? <hr/> <hr/> <hr/> <hr/>	25. How does your firm market field service? <hr/> <hr/> <hr/> <hr/>	26. What will be within the next 2 years the most significant issue? <hr/> <hr/> <hr/> <hr/>

GENERAL INFORMATION	Employee in company	1983	1984
Your name	No. in field service		
Title	No. of field engineers		
	No. of technical support engineers		
Company	No. of field service administrators		
Address	No. of field service supervisors		
	No. of field service line managers		

ALL INFORMATION PROVIDED WILL BE TREATED IN THE STRICTEST CONFIDENCE. INPUT WILL NOT IDENTIFY OR DISCLOSE INFORMATION ON AN INDIVIDUAL BASIS. THANK YOU.

Please return ASAP to:
 Andy Thomas
 Director Field Service
 INPUT Ltd
 Airwork House
 35 Piccadilly
 London W1V 9PB

☐ Check if you would like a summary of this

APPENDIX H: USER QUESTIONNAIRE

USER QUESTIONNAIRE

1983 INPUT FIELD SERVICE SURVEY – USERS

Product Classification	Examples	Manufacturer of Your Equipment	Servicer of Your Equipment and Software (if different from Mfr.)	QUALITY OF SERVICE 1 = Low 5 = Average 10 = Excellent										
				Overall quality of service	Quality of engineers	Quality of service management	Availability of spare parts	Software support capability	Preventive maintenance effectiveness	Remote diagnostics	Quality of information & communication	Value of service compared to price	Quality of service compared to salesmen	Product reliability
Large Systems	IBM 308X BUR B5900 HON DPS7 UNI 90/60 DEC-10													
Small Systems	IBM 8100 BUR B800 HON DPS6 H-P 3000 NCR 8200													
Peripherals and Terminals	Self explanatory													
Data Communications	Modems Multiplexers Tech Control													
OFFICE PRODUCTS	Personal Computer	Self explanatory												
	Word Proc.	Self explanatory												
	Work Stations	Self explanatory												
	PBAX	Self explanatory												
	Copier Fax	Self explanatory												
	Other													
SOFTWARE	System	Self explanatory												
	Applic.	Self explanatory												

										YOUR DESIRE FOR DIFFERENT CONTRACTS 1 = Undesirable 10 = Very Desirable				YOUR WILLINGNESS TO AID SERVICER IF YOU RECEIVED DISCOUNT 1=Unwilling 10=Willing				YOUR WILLINGNESS TO PAY FOR EXTRA/IMPROVED SERVICE 1=None 2=Up to 1% basic charge 3=Up to 5% 4=10% 5=15%					PRICING					
Long term contract	Automatic renewal	Annual invoicing	More flexibility	Bundled = 1 Unbundled = 10	Helping to diagnose	Helping replace boards	Helping to patch software	Delivering portable machines to repair centres	Guaranteed up-time	Guaranteed response time	Guaranteed turnaround on software time	Software consulting from servicer	Software enhancements from servicer	Personalised servicer	Percent increase last year	Percent increase expected	Percent that would be unacceptable	Current contract prices too: High=10, Low=1	Current hourly rates too: High=10, Low=1	Extra shift rates too: High=10, Low=1	Software support rates too: High=10, Low=1							
																							Large Systems					
																							Small Systems					
																							Peripherals and Terminals					
																							Data Communications					
																							Personal Computer					
																							Word Proc.					
																							Work Stations					
																							PBAX					
																							Copier Fax					
																							Other					
																							System					
																							Applic.					

OFFICE PRODUCT

SOFTWARE

<p>In your opinion, what are the worst features of the service you are receiving?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Approximately what are your total expenditures for maintenance?</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 40%; text-align: center;">Hardware</th> <th style="width: 45%; text-align: center;">Software</th> </tr> </thead> <tbody> <tr> <td>1983</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>1984</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>1985</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Hardware	Software	1983	_____	_____	1984	_____	_____	1985	_____	_____	<p>What is your attitude to remote diagnostics?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>					
	Hardware	Software																	
1983	_____	_____																	
1984	_____	_____																	
1985	_____	_____																	
<p>What changes should the vendor take to significantly improve the level of service?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>What is your attitude to preventive maintenance?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Have you considered using a Third Party Maintenance vendor, why or why not?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>																	
<p>What are the best or most positive aspects of service?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Do you receive any special pricing or discount on your maintenance? Please detail.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>What really annoys you about maintenance?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; text-align: center;">GENERAL INFORMATION</td> <td style="width: 40%;">primary business of company</td> <td rowspan="5" style="width: 30%; vertical-align: top; padding: 5px;"> <p>ALL INFORMATION PROVIDED WILL BE TREATED IN THE STRICTEST CONFIDENCE. INPUT WILL NOT IDENTIFY OR DISCLOSE INFORMATION ON AN INDIVIDUAL BASIS.</p> <p>THANK YOU. <i>Andy Thomas</i></p> </td> </tr> <tr> <td>Your name</td> <td>total number of employees</td> </tr> <tr> <td>title</td> <td>number of EDP employees</td> </tr> <tr> <td>company</td> <td>total EDP budget for</td> </tr> <tr> <td>address</td> <td>1983 1984</td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p>are you buying new equipment in 1984? If yes, what?</p> <p>_____</p> <p>_____</p> <p>_____</p> </td> <td style="vertical-align: top; padding: 5px;"> <p>PLEASE RETURN A.S.A.P. TO:</p> <p>ANDY THOMAS DIRECTOR FIELD SERVICE, INPUT LTD., AIRWORK HOUSE, 35 PICCADILLY, LONDON, W1V 9PB</p> </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p><input type="checkbox"/> Check if you would like a summary of this</p> </td> <td></td> </tr> </table>			GENERAL INFORMATION	primary business of company	<p>ALL INFORMATION PROVIDED WILL BE TREATED IN THE STRICTEST CONFIDENCE. INPUT WILL NOT IDENTIFY OR DISCLOSE INFORMATION ON AN INDIVIDUAL BASIS.</p> <p>THANK YOU. <i>Andy Thomas</i></p>	Your name	total number of employees	title	number of EDP employees	company	total EDP budget for	address	1983 1984	<p>are you buying new equipment in 1984? If yes, what?</p> <p>_____</p> <p>_____</p> <p>_____</p>		<p>PLEASE RETURN A.S.A.P. TO:</p> <p>ANDY THOMAS DIRECTOR FIELD SERVICE, INPUT LTD., AIRWORK HOUSE, 35 PICCADILLY, LONDON, W1V 9PB</p>	<p><input type="checkbox"/> Check if you would like a summary of this</p>		
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Planning Services For Management **INPUT**

